

# The United States MILLER

## AND THE MILLING ENGINEER.

Fourteenth Year.—No. 5.

MILWAUKEE, MAY, 1889.

Subscription Price, \$1.00 Per Year.

**SIMON ON ROLLER MILLING.**

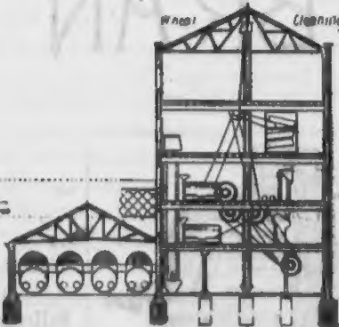
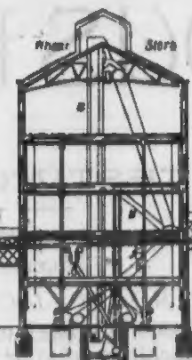
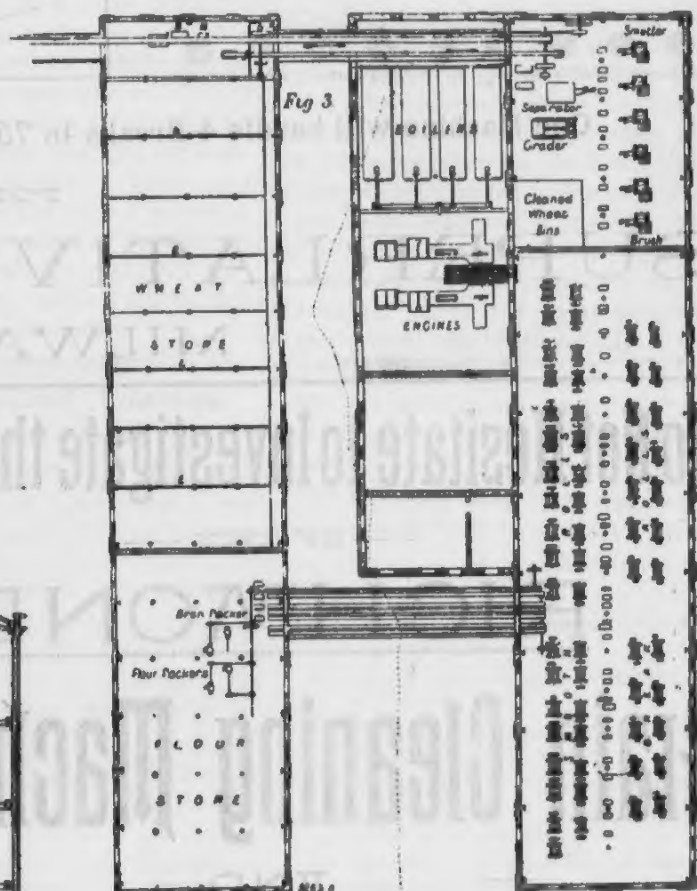
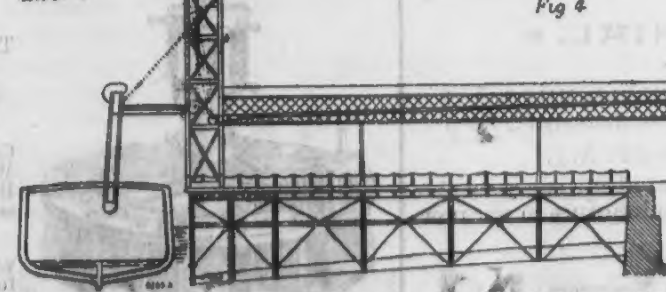
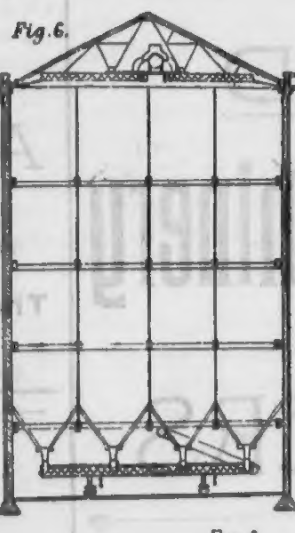
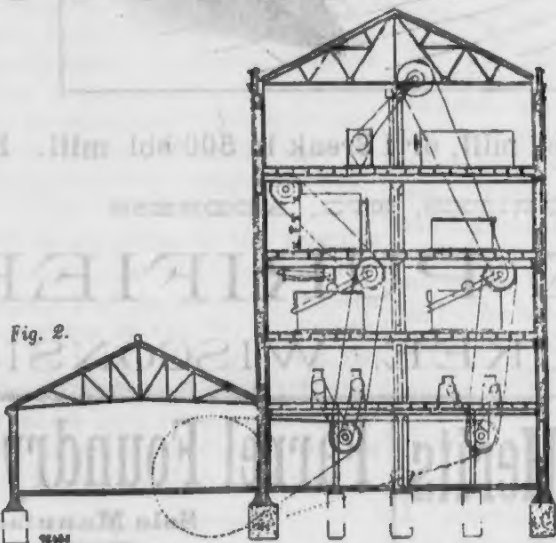
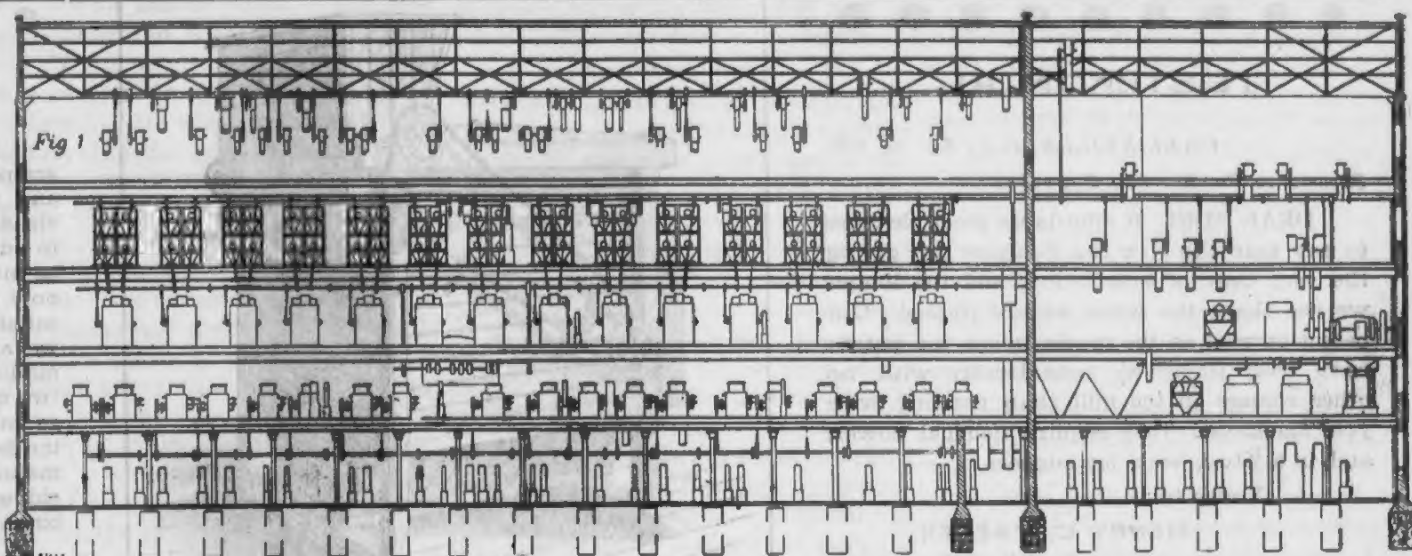
Latest Development of Roller Flour Milling as viewed by the leading Milling Engineer of Great Britain, illustrated by its application to the recently completed great Flour Mills at Rio de Janeiro, South America.

AN IMPORTANT PAPER READ BEFORE THE BRITISH INSTITUTION OF MECHANICAL ENGINEERS AT LONDON IN APRIL '89.

[By HENRY SIMON, M. E. of Manchester, England.]

**N**O Paper has yet been read before this Institution drawing attention to the very extraordinary revolution which, during the last ten years, has been in progress in the manufacture of flour by the substitution of the roller system for the ancient method of grinding by stones. In a paper presented by the writer six years ago to the Institution of Civil Engineers some historical and general notes on roller milling were given, which need not here be repeated; and the object of the present paper is simply to give some further information about the subsequent development and improvement of roller flour milling as carried out by the author.

The completeness of the revolution that has taken place is exemplified by the fact that in practically less than ten years the machinery and methods of milling have been radically and entirely altered, at the cost of an immense amount of capital. The millstone, dating from pre-historic times, has been almost wholly discarded; and the miller has been constrained to unlearn the old method of manufacture and take up one entirely new, based upon very different principles. The change has had the effect of replacing more or less rude mechanical appliances by machinery designed on scientific principles, and of a high class of mechanical construction and workmanship. The best kind of roller mills, as now used for the granulation of wheat and its reduction into flour, resemble in their appearance and in the accuracy of their construction the highest class of machine tools. This radical and important improvement in the character of the machinery employed, is nevertheless, not nearly so radical or important as the improvement in the mode of working, by the combination of roller mills with centrifugal dressers, purifiers, rotary scalpers, and other machinery, so as to produce the best results in a mill working automatically on the principle of gradual reduction. The principle of progress now recognised in milling is, indeed, the same as that followed in other industrial establishments or manufactories, such as spinning mills, weaving sheds, sugar factories, &c., namely, increased elaboration and more scientific treatment, combined with consistent arrangement and a proper proportion of auxiliary machines, for enabling the largest amount of work to be turned out, and of the best quality. This change has called forth an entirely new class of milling engineers, who have by experience, acquired special aptitude in following out the principle of gradual reduction; and even as early as 1878 the necessity for such special milling engineers was alluded to by Professor Kieck, who is recognized as the leading Continental authority upon milling. A further striking difference between the present



PLAN OF RIO DE JANEIRO FLOUR MILL, RIO DE JANEIRO, SOUTH AMERICA.

and the old style of milling flour is that, whereas formerly the intermediate products had to be repeatedly handled, they are now entirely treated without being touched by hand throughout the process. The wheat enters the mill at one end and goes through all the machines automatically, until it is delivered at the other end in the shape of such different grades of flour and offals as it may be desired to produce. The number of attendants required for the milling process proper is very much reduced in comparison with former times. Automatic action in roller milling has been attained almost simul-

taneously in the United States and in this country. In Austria-Hungary, formerly the leading school for milling, and the country in which roller milling originated, automatic action is not yet believed in; and accordingly very large numbers of mill attendants are still required there.

It has recently been ascertained beyond doubt by the writer that, owing to commercial necessities or facilities, Hungarian millers are at the present time giving their whole attention to the manufacture of from 45 to 50 per cent. of the very highest class of flour for export. This flour, which owing to the excellence of

the Hungarian wheat is of splendid quality, still comes into England, although in very much smaller quantity than before the adoption of improved milling in this country. The purification and division of middlings and semolina for high-class flours is carried out in Buda-Pesth with great care; but the grinding of the remainder, whether by stones or by rolls, is not done at all so carefully as in good automatic roller mills in this country. In consequence of the large feed put upon their stones and rolls very much greater pressure is used than

CONTINUED ON PAGE 45.



The Greatest Success of the Day!

# THE NEW ERA SCALPER

Read the following Testimonials and then write us for particulars:

## TESTIMONIAL.

CARLINVILLE, ILL., Feb. 16, 1889.

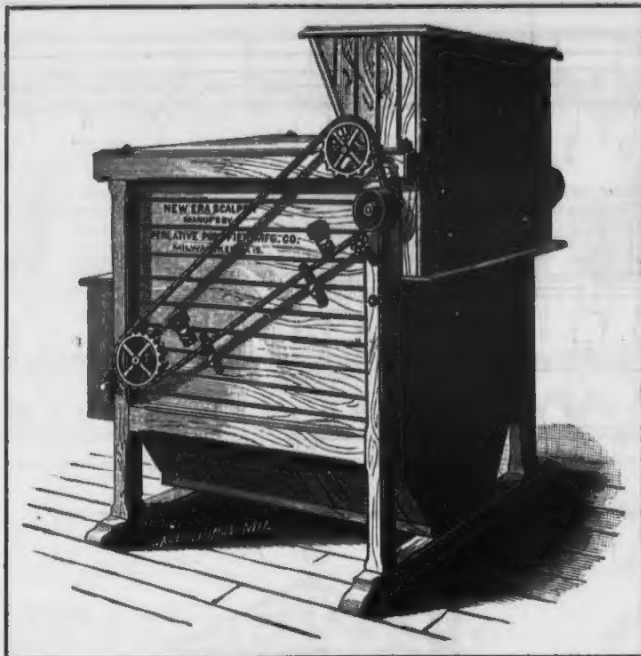
Superlative Purifier Co., Milwaukee:

DEAR SIR: It affords us great pleasure to say that the New Era Scalpers are giving the very best of satisfaction, and the longer we use them the better we are pleased. Our patent as well as the grade below the patent have been improved considerably with no other change in the mill than scalping with your machines. They require nominal power, and, in a word, are a big success.

Yours truly,

HENRY C. YAEGER.

Pres't Yaeger Flour Mill Co.



## TESTIMONIAL.

YOUNGSTOWN, O., Dec. 7, 1888.

DEAR SIR: In order to put in your scalpers on our 2d, 3d, 4th and 5th breaks and retain our hexagon scalpers for wheat cleaners, I was obliged to add another story to our roller room, at an expense of five times as much as the cost of the machines. Having now run the machines for thirty days, I feel satisfied with the expenditure made, as I think we are now making the nicest flour we ever made. Our 2d, 3d, 4th and 5th break flour (we make eight breaks) is as white and clean as our patent, while our flour all through is the best we ever made. Our hexagon scalpers make excellent wheat cleaners, and your machines make excellent scalpers. The two combines make excellent flour.

Respectfully yours,

HOMER BALDWIN.

One Machine will handle 4 Breaks in 75 bbl. mill, or 1 Break in 500 bbl. mill. Break Flour as white as any.

FOR PRICES, ETC., ADDRESS

**SUPERLATIVE PURIFIER MFG. CO.**  
MILWAUKEE, WISCONSIN.

[Mention this paper]

Do Not Hesitate to Investigate the Merits

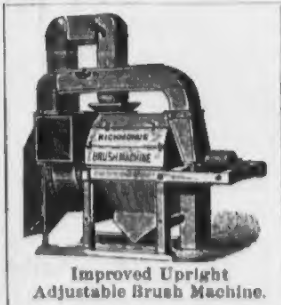
— OF THE —

**RICHMOND**

**Grain Cleaning Machinery**

AND

**BRAN DUSTERS**



Improved Upright Adjustable Brush Machine.

## \* TESTIMONIAL \*

THE CENTRIFUGAL MILLS,  
TOLEDO, OHIO, January 31, '89.

RICHMOND MFG. CO., LOCKPORT, N. Y.:

Gentlemen—We have operated for one year the following machines of your manufacture in our new Model Mill here:

- One No. 1 Milling Separator;
- Two No. 2 Horizontal Close Scourers;
- One No. 1 Empire Horizontal Bran Duster;
- One No. 2 Empire Horizontal Bran Duster.

We frankly state, in our opinion they are the most thorough and complete line of Wheat Cleaning Machines and Bran Dusters offered the trade, and we will cheerfully show them to parties you may send here.

Yours Truly,

BECHTOL, CARNEY & CO.

**Richmond Manufacturing Co.,**  
LOCKPORT, N. Y., U. S. A.

**Farrel Foundry & Machine Company,**

Sole Manufacturers of the Celebrated



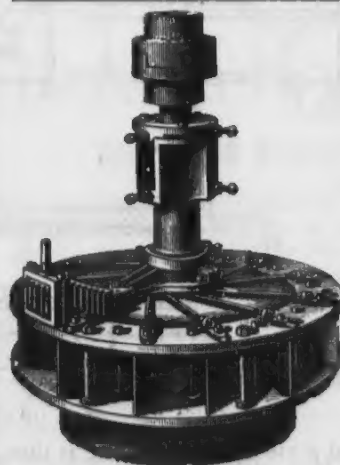
**ANSONIA ROLLS**  
FOR USE IN ROLLER MILLS.

The general experience of American Millers unites in pronouncing these rolls the very best for Flouring Mill use.

These Rolls are now used in all Leading Flouring Mills

Chilled Rolls for Paper Mills a Specialty.

[Mention this paper when you write to us.]



**Leffel Water Wheel,**

Made by JAMES LEFFEL & CO.

The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

Write us for NEW PRICES before buying elsewhere. New shops and New Machinery are provided for making this Wheel. Address,

**JAMES LEFFEL & CO.,**

Springfield, Ohio or 110 Liberty St., New York.

**THE LANE & BODLEY CO.,**

CORLISS.

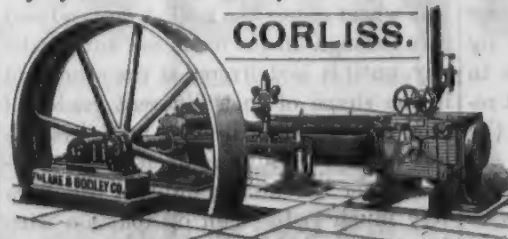
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AUTOMATIC CUT-OFF

**ENGINES**

From Heavy Patterns and of Unexcelled Workmanship.

Steel Boilers, Feed Water Heaters, Shafting, Pulleys and Gearing.



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## UNITED STATES MILLER.

AND THE MILLING ENGINEER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NO. 124 GRAND AVENUE, MILWAUKEE.

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 To Canadian subscribers, postage prepaid..... 1.00  
 Foreign subscriptions..... 1.50  
 All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.  
 Bills for advertising will be sent monthly, unless otherwise agreed upon.  
 For estimates for advertising, address the UNITED STATES MILLER AND THE MILLING ENGINEER.

[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, MAY, 1889.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER AND THE MILLING ENGINEER. You will thereby oblige not only this paper, but the advertisers.

## MILWAUKEE AMUSEMENTS.

ACADEMY OF MUSIC—First-class theatrical entertainments every evening. Matinees Wednesdays, Saturdays and Sundays, at 3 p. m.

GRAND OPERA HOUSE—First-class theatrical entertainments every evening. Matinees Wednesdays, Saturdays and Sundays, at 3 p. m.

STANDARD THEATRE (South-side)—Every evening: matinees Saturdays and Sundays, at 3 p. m.

GRAND AVENUE THEATRE AND MUSEUM—Open daily from 10 a. m. to 10 p. m.

STADT THEATRE (German)—Wednesday and Sunday evenings.

PEOPLE'S THEATRE—Choice variety performances every evening; matinees Tuesdays, Fridays and Sundays, at 3:30 p. m.

PUBLIC MUSEUM, Exposition Building—Open daily; admission free.

LAYTON ART GALLERY—Open daily. Free admission Tuesday, Thursday and Saturday.

## AN IMPORTANT ANNOUNCEMENT.

MILWAUKEE, Wis., April 24, 1889.

To the Milling Public:

WE have this day disposed of our entire interest in the publication of THE MILLING ENGINEER to Mr. E. Harrison Cawker, publisher of THE UNITED STATES MILLER of this city, who will fulfill all of our unexpired contracts and subscriptions. In transferring this property with our good will to Mr. Cawker, we feel that we have placed it in capable hands, and that the interests of patrons of the paper will be carefully and conscientiously guarded. We bespeak for him the same generous measure of support which has been accorded to us in the past.

Respectfully,  
 EDW. P. ALLIS & Co.

FLOUR Mill Builders will find something interesting to them in our London letter elsewhere.

LITTLE or no flour will be exported from Australia this year, as it is selling at home now at the rate of from \$5.45 to \$5.60 per barrel.

BERNETHY'S Treatise on Short System Milling" will be furnished to those of our readers desiring to investigate it on receipt of \$2.00.

THE stream of immigration across the continent to Washington and Oregon shows no signs of diminishing, and promises to continue all summer. Wheat farming and milling interests are rapidly developing.

REPORTS reach us that the Paris Exposition is yet in a very incomplete and confused condition. American visitors will probably derive more pleasure and profit from visiting it after August 1.

WE desire to announce that this journal has secured a technical correspondent at the Paris Exposition; also, that in our next number we shall publish an article on a French system of modern milling, with illustrations prepared expressly for us.

AS evidence of increasing trade with our North and South American neighbors and West Indies, it is interesting to note that the increase of imports

brought in cars and other land vehicles is about \$5,000,000, and the increase of exports thus conveyed about \$1,000,000 for the nine months.

AS we go to press the report reaches us from Detroit that in the suit of the Consolidated Roller Mill Co. against Coombs, of Coldwater, Mich., on account of use of the Mawhood Roller Mill, the decision fully sustains the Gray adjustment patents, and the same are held infringed by the Mawhood machine.

WM. J. LANGSON, secretary of the Milwaukee Chamber of Commerce, will issue his annual report of the trade and commerce of Milwaukee about June 1st. We are assured that it will be the most complete in all respect of any yet published. It will have some new features of special interest.

THE Executive Committee of the Millers' National Association is called to meet at the Plankinton House, Milwaukee, June 10. It is surmised that there will be some interesting dialogues. It is to be hoped that the entire milling press will be admitted to "a front seat on the ground floor" when the animated recitations begin. Well—"all's well, that ends well."

MILLS for the manufacture of cotton in the Southern States are multiplying rapidly. Within a short time 15 companies have been organized, three of them in Alabama. In several instances capitalists from Philadelphia and New England are concerned. The cotton seed oil mills of the South are becoming a vigorous competitor of the American Hog.

IT will be gratifying to the scientific and mechanical world to know that the biography of the late John Ericsson will be written by Col. W. C. Church, editor of *The Army and Navy Journal*, and published in *Scribner's Magazine* this year. The executors have turned over all the necessary papers to Col. Church and the result of his work will prove of deep interest.

GOVERNOR FRANCIS has signed the Grain Option bill, which thus becomes a law in the State of Missouri. The bill virtually prohibits all dealing in grain options unless the parties dealing in such options actually own the grain. The statute is so worded that the issue cannot be evaded, and grain dealers are greatly wrought up and claim the law will drive them to East St. Louis.

THE Western Traffic Association has granted a rate of a fare and a third for round trip over all lines to all millers or others visiting the Millers' Convention, June 11, 12 and 13. When purchasing tickets, notify the ticket agent issuing tickets, and he will give you the necessary certificate. The Central Traffic Association will doubtless give the same rate, though they have not been heard from up to time of going to press.

WE have the pleasure to announce that THE CASE MANUFACTURING CO., of Columbus, O., whose works were burned recently, will resume business at once. We take the liberty of quoting the following from a letter received from the Company, May 21st:

"We had a large number of contracts on hand when the fire occurred. We are now arranging for temporary quarters to fill our contracts, and expect, in the course of a very few days to commence a new plant from the foundation up, and when completed, our facilities will be much better than they have ever been before for our business. Our losses have been heavy; however, we have adjusted them with the insurance companies to our entire satisfaction, and will certainly, in a few months, be in splendid shape for future trade."

ELECTRIC BREAD," says *The Baker's Helper*, is spoken of on both sides of the water in about the same tone as "Elec-

tric Sugar" was a year ago. But there is this to be noted about the former: it has the backing of one of the strongest and most reliable baking firms in Great Britain—Messrs. J. and B. Stevenson, of Glasgow and London. It is now said that after a year of constant experiment, they have successfully applied electricity to bread-baking—producing bread equal in quality to any other, and greatly economizing time and money. Just how the subtle force is applied is what "no fellow can find out," but it will not take very long to decide as to its practicability, and in the meantime the incredulous will do wisely to refrain from sneering at the new discovery, and saying things they may in a few months wish were not on record.

THERE appears to be certainly one strong argument in favor of a school for the education of young men to become good millers. It is next to impossible for the average youth to enter one of our large merchant mills and learn the trade thoroughly. He is placed in some position and kept there. He may learn to do his particular part well, but of the business as a whole he has only vague ideas. The only available school now is the small country mill. There he may learn the business in all its departments tolerably well—well enough, if circumstances are favorable, to qualify him to run another small mill, but few have the ability, pluck and luck to go from the country mill to a desirable position in a city mill. A few will succeed despite all obstacles, but the majority will "drop into some rut" and stay there until for one reason or another they quit the business. If there were two or three good training schools for the trade it would be beneficial in many ways. The brewers and others have colleges; why not millers? We hope this subject will be discussed at the June convention.

## REMARKS ON MILLING JOURNALISM.

(By the Arizona Kicker, Jr.)

IF our jaundice-hued E. C. of Buffalo, according to its time-honored custom, takes out in trade the patent medicine "ads." with which its columns abound of late, there is some reason to hope that either its bilious and fretful temperament may show improvement, or else that it may die under treatment. The result will doubtless be watched with interest by the makers of the "remedies," upon the ancient principal of "trying it on the dog first."

Our Kansas City contemporary after a protracted and gradually contracting diet, consisting largely of "pi," it would seem, has moved down to a level with its constituents of the Kaw bottoms, where the principal products are red mud, mosquitos and like pests. We hope that the remarkably clean past record of our friend may not become contaminated through surroundings, and that it may not become a "mud slinger" with the others. Kansas City dirt is too expensive, Cedric.

The St. Louis "Eli," it is reported, has laid an idea, and the resultant cackle will again resound through the neighborhood. Another mill is contemplated, and will be built with machinery taken in payment for advertising. The system and machines may constitute somewhat of a "happy family," it is true, but if enough of the "right sort of advertisers" hold out, "Eli" will doubtless "get there." If the miller is so fortunate as to be able to read, perhaps "Eli" may secure a second subscriber.

We wouldn't for the world be so downright ugly in disposition as the "old lady" of Chicago, who gets around fortunately but once a month among the neighbors, with her gossip and scandal. About so often she shakes her front curls, scowls

and expresses her mind about someone, then sits back complacently and, wrapped in her old plaid shawl of envy and egotism, imagines that the victim cowers and trembles at her wrath. Did anyone ever see a complimentary or even amiable remark about a cotemporary in the editorial columns of the A. M.? If so, in the name of faith, hope and charity, let it be recorded.

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As the time approaches for the annual convention of the Millers' National Association, expectancy and hope gladden the hearts of some of our E. C.'s with whom business has been "quiet" of late. There may be a show for "fine work" by July next and adequate support in an emergency means from two to four pages of extra advertising; advertising means money—that magic talisman for which we all strive after our own peculiar methods.

COMEBACK EVERYBODY.

## MILLERS' NATIONAL ASSOCIATION.

THE following call was issued from the Secretary's office at Milwaukee, Wis., May 18, 1889:

The annual convention of the Millers' National Association will be held in Milwaukee on the 11th, 12th and 13th of June next, with headquarters at the Plankinton House. Separate meeting places will be provided to the extent required for spring and winter wheat millers, and it is desired that all sectional and local organizations, as also individual millers who appreciate the advantage of association, attend and by counsel and presence in numbers do their fair share towards improving the milling business.

The usual reduction in railroad fares will be arranged, and three or four days in the beautiful and hospitable city of Milwaukee during the most delightful season named can be pleasantly as well as profitably employed.

The executive committee will meet on Monday, June 10, at the Plankinton House.

The following have been suggested as appropriate subjects of consideration:

1. Organizations to include as National.
  - a. The Spring Wheat Mills Organizations.
  - b. The Winter Wheat Mills Organizations.
  - c. Foreign and domestic crop information, exclusively for members.
  - d. Delegation to International Congress of Millers at Paris August 20th, 21st and 22d.
  - e. Reform of Export Bill of Lading.
  - f. Order Bill of Lading.
  - g. Sales only for cash.
  - h. All flour to bear maker's name and location.
  - i. Form of domestic sale contract.
  - j. Methods of sale and rates of commission or brokerage.
  - k. Reports on standing and conduct of buyers and brokers.
  - l. Wheat inspection and elevator customs.
  - m. Uniform weights of sack packages.
2. Limiting production.
3. Establishing from time to time minimum prices.
4. Systematic canvass to induce millers to join respective associations.

If the result of intelligent discussion of these and other matters, which may be presented, take the shape of agreements binding individuals rather than as heretofore mere expressions by resolutions, the effect of our meeting cannot fail to be beneficial to the milling business.

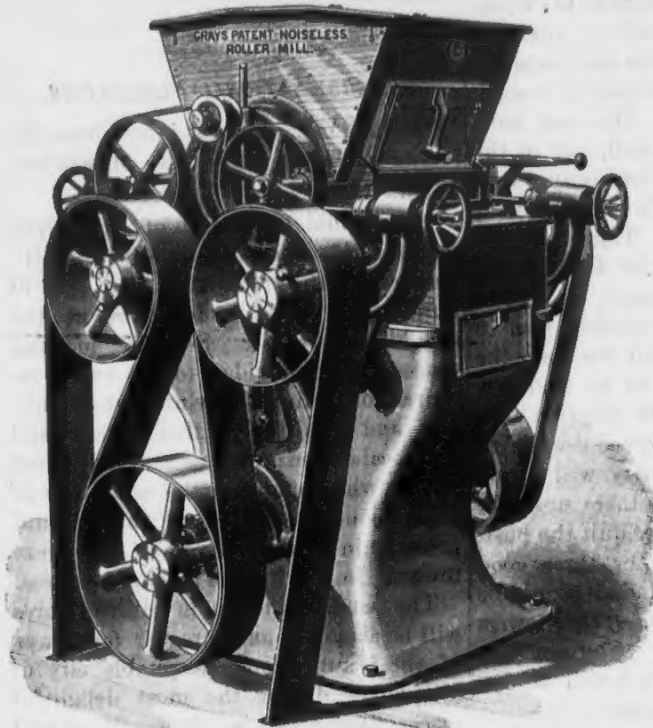
[Signed] C. H. SEYBT, President.  
 S. H. SEAMANS, Secretary.  
 ALEX. H. SMITH, Chairman Ex. Com.





— SOLE BUILDERS OF —  
**GRAY'S PATENT NOISELESS  
 ROLLER MILLS**

(Licensed by the Consolidated Roller Mill Co.)



STANDARD MACHINE.

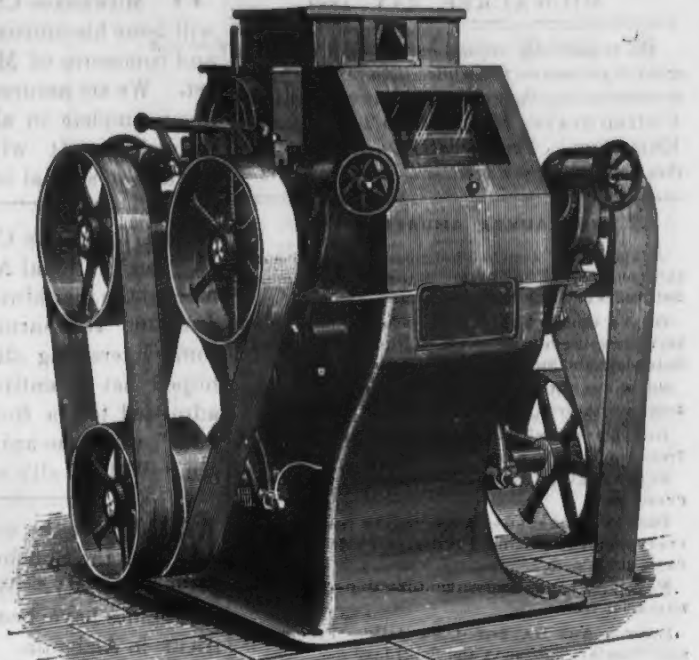
Perfectly Adapted to All Con-  
 ditions and Requirements  
 of Grinding.

The Most Perfect Adjusting  
 and Feed Devices on  
 the Market.

The Original and Best Solid Iron  
 Frame Machine.

Over 26,000 Pairs in Use.

Write for Our Catalogues



STANDARD MACHINE, WITH SHAKER FEED.

IN order to meet the demand of millers who prefer to use a Shaker Feed, we have perfected and now furnish any style of the Gray Machines with the most substantial, and, in every way, the best Shaker Feed Device on the market. To accommodate customers who are using our Roller Mills with the old style Feeders, and who desire to change to Shaker Feeders, we have arranged to supply this Improved Shaker Feed, which may be substituted with very little trouble, at a special discount price.



NEW HARMONY, Ind., Feb. 13, 1889.

THE KNICKERBOCKER CO.:

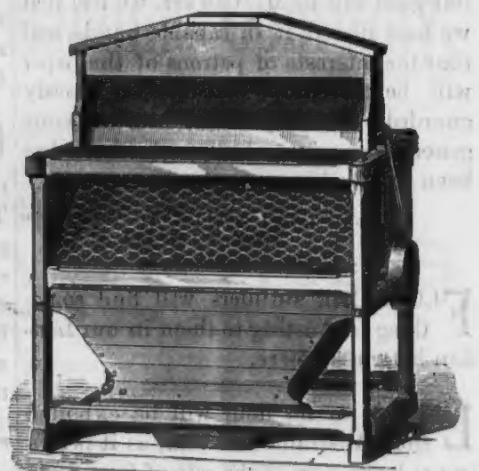
GENTLEMEN—We are well pleased with the NEW ROUND REEL. It is simple, durable, effective. It is mild in action, capable of doing a large amount of work, and making close, dry separations. It is quiet, clean and easy running. We take pleasure in endorsing it as a standard machine, worthy of high commendation.

Yours Truly,

[Signed],

CORBIN MILLING CO.

Cheap,  
 Durable and  
 Effective.



**THE MORSE BREAK SCALPER**



WE caution all parties against purchasing or using dust collectors which infringe our patents, and hereby give notice that we shall take proper legal steps to enforce our rights against all persons who infringe them, whether manufacturers or users.

No machine can be made after the pattern of the CYCLONE that does not infringe our rights.

**The Knickerbocker Co.,**  
 JACKSON, MICH.



would be necessary with anything like the proper feed, and thus the flour becomes unnecessarily heated. The greatest difference, however, between milling in Austria and in this country, is in the reduction of the tallings, siftings, and second-class products, which have been rejected during the manufacture of the highest class flour. To finish up these different products according to anything like a proper system is not even attempted in Buda-Pesth. As a consequence, anything after the first 45 or 50 per cent. of flour from the wheat is very much worse than in this country. With very little regard to size and quality, the material is ground and dressed, and re-ground and re-dressed, thus making out of their splendid wheat only very low brands of flour, all of which, however, find a ready and profit-

the experience of the more progressive British millers, that there is no process of grinding which is not better performed by a roller mill properly constructed and properly worked having rolls of chilled iron, smooth or grooved according to their purpose. To this day there is scarcely a really complete automatic roller mill, the writer believes, either in Germany or in Austria.

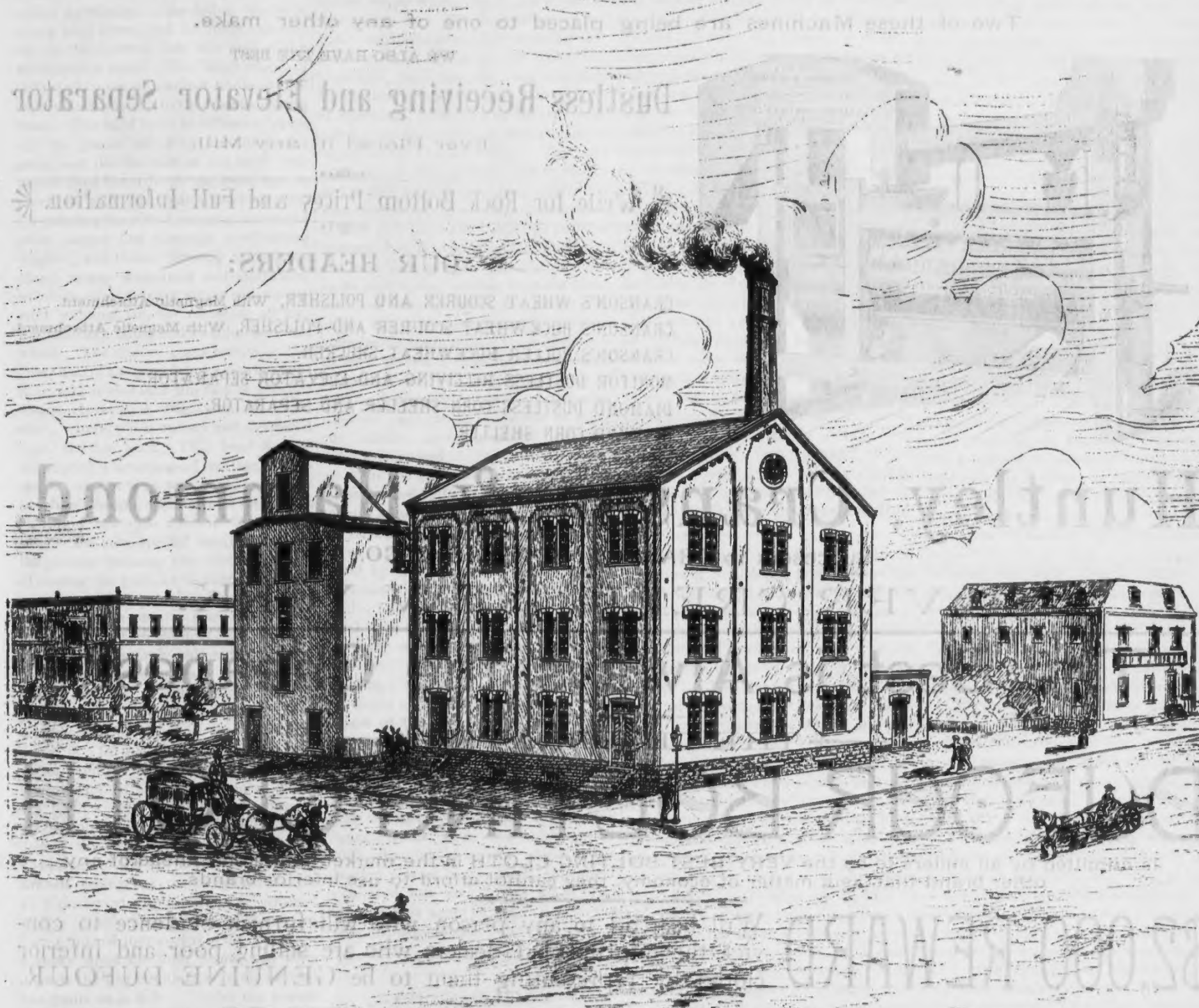
The introduction of roller milling in this country has caused a rapid increase in the number of large mills. Those roller millers who were first in the field have not only doubled their output, but in some cases have increased it three, four, and even five times, with corresponding profit, and naturally at the expense of their less enterprising competitors. The fact is now fully established that in a well-constructed

for Messrs. E. Shackleton and Sons, of Carlisle, in 1879; the first automatic roller flour mill in England in 1881 for Messrs. F. A. Frost and Sons, of Chester. The total number of complete mills, or important reconstructions of old mills, executed by the writer alone since 1878, amounts to considerably more than 200, varying in cost for machinery, exclusive of motive power, buildings, etc., from 1000*l.* to 40,000*l.* for each mill. Large roller mills can necessarily be fitted up with greater refinement, as well as with a larger number of appliances for saving labor, than small mills.

*Roller Flour Mill and Granary at Rio de Janeiro.*—The most recent improvements in roller milling will be best realized, the writer thinks, from a description of the machinery and arrangement of a large

order that the largest sea-going vessels may be able at all times to discharge their grain without the heavy constant expense of dredging, an iron jetty was constructed, projecting 125 feet from the wharf's edge. Fig. 4.

*Buildings.*—As shown in the plan, Fig. 3, there are two principal blocks of buildings, of which the one nearest the bay is used for the storage of grain and flour, and is called the store; while the other contains all the machinery for the preparation of wheat and production of flour, and is called the mill. Both are of the same dimensions, namely, 234 ft. long and 46 ft. wide; and each has five floors of an average height of 13½ ft. The framework of the walls, the girders, columns, roof principals, and roof covering are of cast and wrought iron, of which there



A SOUTH AMERICAN MILL, BUILT BY EDW. P. ALLIS & CO., MILWAUKEE, WIS. [See next page.]

able sale in their own country. The contrast, therefore, stands thus between the English and the Hungarian method of milling: from the wheats used in Hungary as high a class of flour could be manufactured automatically in this country as is made at very much greater expense in Austria; whilst the last 30 per cent. of flour would be considerably improved under the best English roller system. It may, therefore, be stated that Hungarian milling as a whole no longer occupies the proud position it held up to a few years ago, before the roller process had reached its present development in this country. Austrian and German millers, and it is believed even some in America, still cling fondly to the use of millstones for grinding and finishing fine intermediate products, notwithstanding that it has been clearly demonstrated by

and well-managed roller mill, a larger percentage of superior flour can be made out of the same wheat than by millstones, and at much less cost and with much less expenditure of power. With regard to the power consumed by the various machines used in modern flouring mills under varying conditions, the writer may refer to a paper read by him before the National Association of British and Irish Millers at their London meeting last year, containing an account of what he believes to be the first and only complete series of trials which were conducted under his direction at the Kirkdale Roller Mills, Liverpool, with the assistance of Mr. Michael Longridge.

The first complete roller mill without the use of stones in England was built by the writer in 1878 for Mr. Arthur McDougall, of Manchester, and in Ireland

mill, carried out with the utmost regard to excellence of production, which is at present being erected in Brazil for the Rio de Janeiro Flour Mills and Granary Company of London.

*Site.*—In an enterprise of this nature a question of primary importance is the selection of a suitable site for mill buildings, as determined mainly by the facility with which wheat can be conveyed to it and flour be carried away. Such a site was fortunately secured on the shore of the bay of Rio de Janeiro, and within easy access of the city. The preparation and extension of the ground for the erection of the mill premises was a costly undertaking, inasmuch as the whole of the area comprised between the edge of the present wharf and the old high-water mark had to be filled in to an average depth of fifteen feet. And further, in

a total weight of about 1,100 tons. The flooring is composed of two layers of 1½ inch boarding, and the joints of the upper layer are at right angles to those of the lower, which not only prevents the passage of dust, but is also found by experience to be in a measure effectual in preventing the spread of fire. The flooring is supported on wooden joists; but the whole weight and vibration of the machines are transmitted direct to the main girders by heavy pitch-pine beams, which run from end to end of the building. The walls are composed of brick; their only duty is to make the buildings weather-proof, inasmuch as the iron stanchions of the framework take all the strains brought to bear upon the structure.

*Motive Power.*—The two engines are horizontal compound tandem condensing,

CONTINUED ON PAGE 47.



**SPECIAL STAMPERS OF SHEET METALS.**

We do Stamping and Pressing of Sheet Metals for All Classes of Work. Also Tinsmithing, Galvanizing &amp; Japanning.

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INSIST on having this Bucket furnished when ordering.

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We do not advertise Seamless Elevator Buckets and all orders with "Pleced Ones".

We will make Special Trips to our new factory. Send for Circulars.

**THE AVERY STAMPING CO.,**SUCCESSORS TO  
AVERY ELEVATOR BUCKET CO., CLEVELAND, OHIO, U. S. A.

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IS ACKNOWLEDGED TO BE

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Two of these Machines are being placed to one of any other make.

WE ALSO HAVE THE BEST

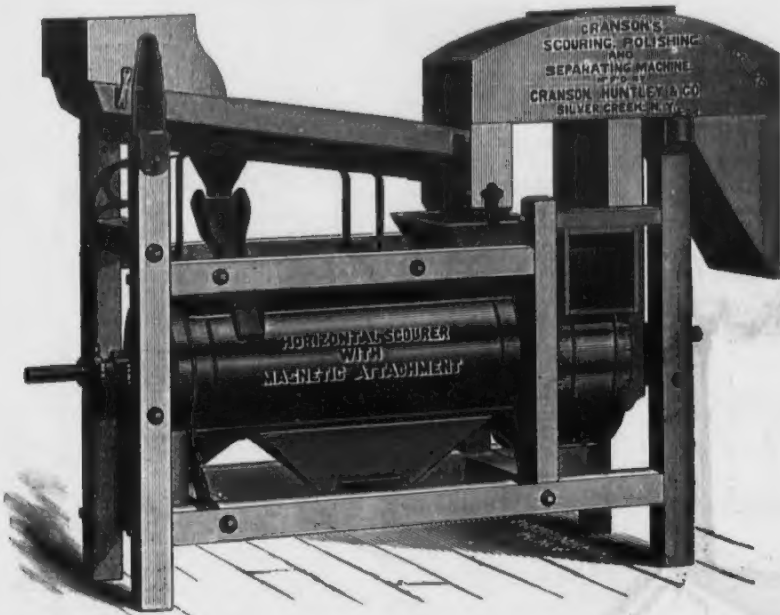
### Dustless Receiving and Elevator Separator

Ever Placed in any Mill.

✧ Write for Rock Bottom Prices and Full Information. ✧

#### OUR HEADERS:

CRANSON'S WHEAT SCOURER AND POLISHER, With Magnetic Attachment.  
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## Huntley, Cranson & Hammond,

Succesors to CRANSON, HUNTLEY &amp; CO.,

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# DUFOUR BOLTING CLOTH

Is admitted by all millers to be the VERY BEST BOLTING CLOTH in the market, and so far ahead of any other brand that, as a matter of economy, they cannot afford to use inferior brands.

**\$2,000 REWARD**

Will be paid to any person who will furnish evidence to convict the unprincipled dealers who are selling poor and inferior cloths by representing them to be GENUINE DUFOUR.

**R. P. CHARLES,**

13 South William Street,

NEW YORK CITY.

**MILLERS**

Of the United States and Canada, write us for our new pamphlet and revised price list of our

## Jonathan Mills Universal Flour Dresser

The BEST machine on the market. Giving satisfaction everywhere, in the best Mills of this country. Thousands in use. We carry a full line of CROWN SILK ANCHOR BOLTING CLOTH AND GRIT GAUGES.

**JONATHAN MILLS MFG. CO., CLEVELAND, OHIO, U.S.A.**

We Solicit Your Orders.

**STILL ON TOP!**

Perhaps the highest compliment that could be paid the "SALEM" Bucket, is the fact that, during the past few years, its shape has been so closely imitated by other manufacturers, as to infringe our patented rights; but experience reveals the imperfections of imitations, and, we therefore, take it as a further compliment to the "SALEM" Bucket, that some of its old patrons who were induced to try the imitations, have now returned to the Salem Bucket, thereby acknowledging it to be the most satisfactory. Don't be deceived by other makes of Buckets that are claimed to be "just as good." Insist upon having the original and reliable "SALEM" Bucket. All legitimate "Salem" Buckets are plainly marked with the word "SALEM."

**W. J. CLARK & CO., Sole Manufacturers, SALEM, OHIO.**

THORNBURG &amp; GLESSNER, General Agents, CHICAGO, ILL.



each with cylinders of 10 in. and 36 in. in diameter and a stroke of 45 in., making 70 revolutions per minute, and together indicating 800 horse-power, with a guaranteed consumption of 2½ lbs. of coal per horse-power per hour. The power of the engines is transmitted through one crankshaft to a rope pulley 20 feet in diameter, grooved for twenty 1½ in. ropes. Steam is supplied by four Lancashire steel boilers, 7 feet in diameter and 30 feet long, the two flues being each 2 feet 9 inches in diameter, and fitted with nine Galloway tubes.

**Storage of Grain.**—The tower A at the end of the jetty, Fig. 4, contains a wheat elevator capable of lifting 65 tons per hour. As shown, it is of the ordinary construction of grain elevators for use in connection with ships or barges; the elevating mechanism is carried at the ends of two long levers, and its lower extremity can be lowered into the hold of the wheat-laden vessel. The lifted wheat is delivered upon an endless india-rubber band, which carries it to the wheat-cleaning house. The band itself is utilized to transmit the power necessary for lifting the grain, and like the rest of the band conveyors used throughout the buildings, is provided with automatic tightening gear. On entering the wheat cleaning house the grain passes first through a self-acting weigher; and thence through three combined rotary separators and aspirators, which consist of rotary sieves with a powerful exhaust fan, for removing all impurities both larger and smaller than the wheat. The cleaned grain returns on the lower half of the same band which brought it in, and is shot into the foot of another 65-ton elevator, B, Fig. 3, in the grain store, whereby it is raised and delivered upon the top band. This band is provided with a throwing-off carriage, which can be anchored at any position in the building's length, and delivers the wheat right and left upon the top floor of the store. To meet special requirements in the present instance, two distinct modes of storing the grain have been provided, namely, on floors and in silos. The latter plan has in certain cases marked advantages, of which the principal are that the silos are entirely self-emptying, and have a maximum storage capacity for space occupied. The tendency at the present time is to use silos only, the construction of which is shown in Fig. 5 and 6. In this granary there are four floors, each 107 ft. long and 46 ft. wide. Under each of the three upper floors are fixed a large number of drawing-off spouts, one in the centre of each 21 square feet of floor area. The outlets of these spouts are closed by valves, all of which are self-closing, but can be opened in sets of four by wire pulls from the ground floor. They are so constructed that upon being opened they sprinkle the wheat in a spray upon the floor below, and thus permit the free circulation of air amidst the grain as it falls. Under the lowest floor are thirty-two exit spouts, connected with the measuring machines, Fig. 4. By the use of partition boards, Fig. 3, thirty-two distinct qualities of grain can be stored; and by the aid of the measuring machines these several qualities can be drawn off in any desired proportions by means of the two conveying bands, Fig. 4, running lengthways of the granary. By these the mixed wheat is carried from the floor, as also from the mixers under the silos, at the rate of 10 tons per hour, to the elevator; and thence by the bands to the wheat-cleaning house. Wheat left to lie undisturbed for any length of time in a climate like that of Rio would, as a matter of course, mildew. To obviate this possibility the two bands are each large enough to carry 65 tons per hour; so that, whilst one is supplying the mill through the elevator, wheat can be carried off by the other band from the other half of the store, and be lifted by the elevator from the bottom to the top of the store. Thus

a complete turning over and airing of the wheat is accomplished. This granary has sufficient capacity for the storage of about 5000 tons of wheat.

(NOTE.—We are informed that American grain-cleaning machinery is principally used in this mill.—EDITOR.)

**Final Wheat-Cleaning Machinery.**—The wheat carried from the store by the band is first run again through an automatic self-registering weighing machine, and then passes through four cylindrical reels, which are provided with covers composed of steel wires, and with a contrivance whereby the spaces between the wires can be contracted or enlarged at will. The cylinders sort the wheat into three distinct sizes, which throughout the remaining cleaning process are treated separately; the treatment is the same for each size, but the sorting into separate sizes insures better work. Each size of wheat now passes to a "dustless wheat separator," containing rapidly-vibrating riddles and fan aspirators, by which the loose dust, chaff, oats, etc., are removed. It is further passed through a second set of separators, which can be set still more exactly, so as to remove the remaining impurities of the same kind. The next machines in the process are thirty-six cockle and barley separating cylinders. Their surrounding covers are composed of zinc, and have their interior surfaces impressed with indentations of such size and form that in the cockle machines all seeds, cockle, etc., smaller than the wheat are lifted out, whilst in the barley machines the wheat is separated from all grain longer than itself. From these cylinders it travels to three machines called "scourers," or "smutters," consisting of vertical stationary cylinders of steel with diagonal perforations. Inside of these run rapidly revolving shafts, carrying beaters composed of iron rods; the beaters scour the grain in its passage down through the cylinder, breaking and removing smut balls, loose bran, etc., which are then drawn away through the casing by an exhaust fan. The scouring is followed by a brushing process, which is performed in three machines, each containing four pairs of horizontal circular brushes on a vertical spindle. The upper brush of each pair is stationary, but the lower revolves rapidly; so that by centrifugal action the grain passes from the centre of the machine to the circumference of the first pair of brushes, and thence by gravity to each of the lower pairs in turns. The effect of the brushes is further to remove loose bran, dust, the beard of the grain, etc., and to polish the outer surface of the grain. After going through a final automatic weighing machine, whereby the amount of loss in the cleaning process is registered, the wheat is elevated into the cleaned wheat bins, in which it is stored in readiness for the roller milling process.

(To be continued.)

#### OUR LONDON LETTER.

British and Colonial Crop Conditions.—International Millers' Convention at Paris in August.—Large Government Mills to be erected in Portugal.—A Hint to American Mill Builders.

THE weather during the past month has not been so favorable to farm work as the farmers could have wished, owing to the frequent heavy rains and cold weather. Tilling and sowing have consequently been interrupted and except in early districts there are still some grain crops remaining unsown. The rains, however, have improved all the growing crops and with warmer weather, which we soon hope to have, the crops will come up with a rush. No doubt it would have been better for the farmers if the downpour had been deferred till they had finished sowing, but as it is, results prove it to have been beneficial. Pastures have seldom looked more luxuriant and promising and wheat already hides the ground. Behind as

many farmers are, with spring sowing in the country, they are far less unfortunate in this respect than their fellows in most parts of Continental Europe. Even in France the work is relatively more backward than it is here, while in Germany and Austria-Hungary but little progress had been made up to the middle of the month, and in Germany, at any rate, further interruption has since occurred. In Italy and Switzerland too, sowing has been frequently interrupted.

The Easter of 1889 finds wheat already down in value, beyond the dreams of buyers, and since the holidays the apathy in the wheat trade continues. Millers are only buying what their wants compel them to, which, in face of the markets we have had lately, they have each time been able to do on more favorable terms. The stock of English wheat held by the farmers is still thought to be considerable, and it is from that source, no doubt, that the provincial millers are able to supply themselves. In harmony with wheat, prices of flour are rather lower, and even then the trade is quite retail. On the continent wheat is no doubt wanted, but the difficulties of finance continue to be an obstacle in the way of willing importers. In India the same difficulty exists and the high freights ruling, prevents sellers assimilating prices to buyers' views here, so that Indian wheat is quoted on "change" at 31 to 36 shillings, and fairly maintains its firm position. The Russian wheat supplies are steady and Danubian must be quoted at 26s. 6d. to 33s. 6d., Crimean Azima 32s. to 34s. and other sorts on equal terms, so Russian wares keep well in favor with English buyers. There was a fair attendance at Mark Lane Corn Exchange to-day and prices of wheat and flour remain steady. For wheat there was a better demand. Flour must be quoted at 23s. 6d. for country and 26s. 6d. for good American, and up to 36s. for English top price and Hungarian.

A council meeting of the National Association of British and Irish Millers was held at their offices on April 10th, when the president—after the treasurer's appeal to the trade, the financial statement and the Technological awards had been disposed of—brought before the meeting the question of the best place in which to hold the next convention. After some discussion it was proposed, seconded and carried unanimously that "The 1889 convention be held in Paris on the 20th, 21st and 22d of August. A better time than August could not have been proposed to hold a convention in Paris, and as the Royal Agricultural Society's great show will take place in Windsor Great Park during the last week in June it would have been better to hold it the latter end of June as the millers always visit the show. It would also have been satisfactory to visit the Paris Exhibition earlier, as it would not be any way near complete. Some idea of the progress which is being made in the British Section can be gathered from some of the statements made at a meeting of the executive council of that section of the Paris Exhibition on the 21st of last month. We were told at the meeting that the total amount of space placed at the disposal of the British Section by the French authorities was 232,845 sq. ft., including, of course, the outside exhibits, the social economy section, the Cape, New Zealand, Victoria exhibits, the Ceylon Tea House and the Indian Pavilion. If more space had been granted it could have been filled twice or three times over. The Fine Art Section would do credit to the country and excite interest among the foreigners. The decoration of the courts was progressing satisfactorily and many of the corporations had sent their banners and coats of arms for exhibition. The Indian Pavilion would be one of the features of the section and of the Exhibition, and the social economy and the anthropological exhibits would also be

worthy of attention and a source of great interest.

**INDIAN WHEAT.**—The English government have summoned a conference of representatives of the corn trade in London, Hull, Liverpool, Bristol and elsewhere, to meet at the Indian office on the 8th of May, in respect of the exhaustive enquiries they have made in regard to the impurities in Indian wheat. The object of the meeting is to discuss, among other theories, the impurities which interfere with the sale and commercial popularity of Indian wheat. This wheat is by nature a hard, strong, bright sort, but the native methods of threshing and winnowing fills it with all sorts of substances not good for food. A fortunate corn broker, for instance, wears at this moment a diamond ring which he lately took out of a sample; but in general, foreign ingredients consist rather of dead mice and rats, pieces of rock, camel and sheep refuse and other extraneous matter, from which it would be desirable to have the consignments freed. In my next letter I will report what takes place at this much talked of conference.

According to a Sheffield daily paper, the Portuguese government in their desire to regulate and protect trade are finding themselves in a conflict with a variety of interests. The public here were made acquainted with their dispute with the port wine shippers and incidentally in a report on the finances of Portugal, Sir George Bonham refers to legislation, dealing with cereals. This legislation has been mainly experimental, with the object of inducing the millers who have practically a monopoly and are able to influence the price of bread, to use Portuguese grown wheat in preference to foreign. In response to pressure brought to bear upon them by the agricultural interest, which in spite of protective duties, is as depressed in Portugal as elsewhere, the government last year passed a measure increasing the duty on foreign wheat, reserving to themselves the power in the event of bread reaching a certain point, to reduce the duty. Their calculation, according to which they had hoped to increase the consumption of home grown wheat, are not justified by the result. As the millers raised the price of flour, which renders a rise in the price of bread inevitable, the government met the action of the millers by importing large quantities of foreign flour. In December the duty on wheat was reimposed and in order to avoid a repetition of their contest with the millers, the government are about to erect state flour mills, for which purpose a bill will be introduced. It is contended in Portugal that the year was not a perfectly fair test of the efficacy of the government measures, coinciding as they did, with bad harvests in America and in the greater part of Europe, which caused a rise in the price of wheat. The duties have again been raised and now stand at 1.1d. per kilogramme for wheat and 1.45d per kilogramme for flour. With this news before them I trust that the Milling Engineers of the United States will take steps to get their share of the erecting of these new government mills.

L. MARGROVE.

LONDON, April 29, 1889.

#### A SOUTH AMERICAN MILL.

THE illustration on page 45 represents the flouring mill of Tiscornia Bros. & Co., at Marcos, Juarez, Argentine Republic, South America. The main building is 50x65 feet, three stories and basement. An engine and boiler house 26x40 feet stands in the rear, and an elevator having a capacity of 40,000 bushels, on one side of the mill, and connected with it by means of a bridge. The mill has a capacity of 250 barrels of flour per 24 hours, was built and equipped by Edw. P. Allis & Co., Milwaukee, Wis. and is evidence of their deserving world-reputation as superior mill-builders and furnishers.





# The Link-Belt Machinery Co.

Are Prepared to Furnish Machinery and Appliances for

## Transmission of Power

After the most approved Plans, by use of

# MANILLA ROPE.

For Particulars and Estimates apply to them at

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### Richmond City Mill Works,

General Mill Furnishers,

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Recent Improvements Combine to make this the Best Flour Packer on the Market.

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Oldest and Largest Manufacturers in the U. S. A. of

**Vulcanized Rubber Fabrics for Mechanical Purposes**

**MILLERS' HOSE A SPECIALTY.**

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**RUBBER MATS, RUBBER MATTING, and STAIR TREADS.**

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Improved + Walsh + Double + Turbine



This wheel has a perfect fitting cylinder gate and draft tube combined, and allows no water to escape when closed.

**POWER GUARANTEED**

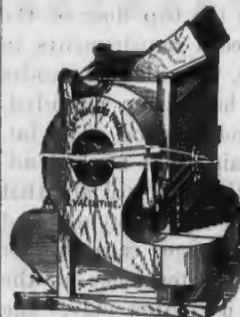
equal to any wheel on the market using equal amount of water. Address for particulars.

**B. H. & J. SANFORD,**

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**IMPROVED CORN SHELLER,**



IT IS THE BEST CORN SHELLER MADE FOR MILL USE.

IT IS Simple in Construction Almost Noiseless, AND Requires Little Power

HUNDREDS ARE IN USE.

For descriptive circular, price list, etc., Address

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Gorham, Ontario Co., N. Y.

## \* EVERY \* MILLER \*

Whether using Water or Steam Power, who wants

**To Save His Machinery**

And reduce the cost of running expenses, should have a copy of a Pamphlet on Lubrication, which will be SENT FREE on application to

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The "One Horse Shay."

Light, Durable, Well Made, Steel Axle and Steel Tires, Good Hickory Stock.

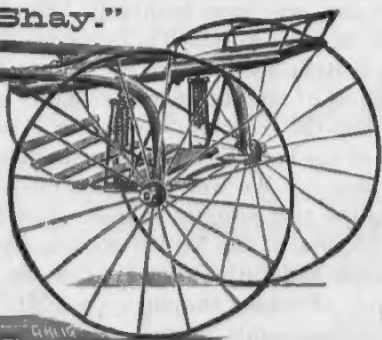
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The best made ROAD CART for the money.

PRICE \$15.00. Send Postal or Express Order, Bank Draft or Registered Letter. Shipped promptly on receipt of money.

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Refer to the editor of this paper. Mention this paper when ordering.



## BASS FOUNDRY AND MACHINE WORKS,

FORT WAYNE, INDIANA.

—MANUFACTURERS OF—

**First Class Steam Boilers,**

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**Portable Boilers of all Sizes and Styles.**

TWO SHEET BOILERS A SPECIALTY.

Contracts taken for Complete Power Plants.

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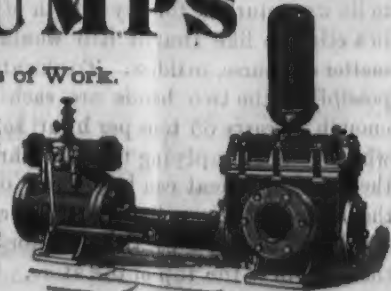
Builders of Single and Duplex

## STEAM \* PUMPS

Of Every Description for all kinds of Work.

Satisfaction Guaranteed.

Send for 1888 Catalogue.



## J. B. A. KERN & SON, Merchant Millers,

Capacity 2,000 Barrels Per Day.

MILWAUKEE, WIS.

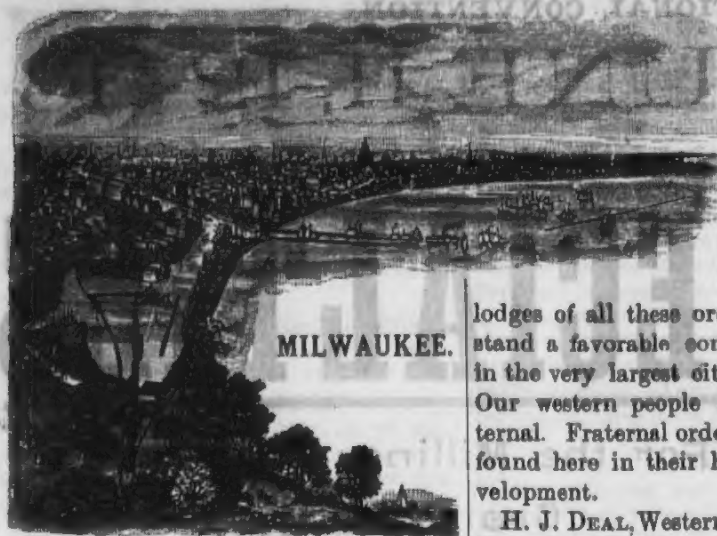
Manufacturers of Choice Minnesota and Dakota Hard Wheat Flour.

## RYE FLOUR

By most approved roller process, guaranteed the best and purest rye flour manufactured.

WE INVITE CORRESPONDENCE FROM CASH BUYERS.





MILWAUKEE.

ALL the Roller Mill Manufacturers in the United States will probably be represented at the Millers' Convention here in June. The decision in the Coombs case, mentioned elsewhere is of GREAT IMPORTANCE to all manufacturers of roller mills, as well as to all users of such machines. The Association committee on patents will probably make a report, which will be very interesting, as it concerns almost every miller in the country. We regret that we have not a full copy of the Judges' decision, which covers very broad grounds and is far reaching.

EDW. P. ALLIS & Co.'s Reliance Works is always an unfailing source of attraction to millers and others visiting Milwaukee.

GEORGE TEITJEN, representative of THE PHOENIX IRON WORKS CO., of North St. Paul, made us a call May 11. He reports business good.

A CORRESPONDENT writes us that Tennessee and Kentucky millers will be well represented here in June. They will meet with a hearty welcome.

A NOTABLE curiosity in this city is a wind-mill run by water-power. It was built as an ornament to perfect a wealthy gentleman's landscape garden.

MILLERS and grain dealers, when in Milwaukee, should not fail to visit the establishment of the Milwaukee Bag Co., No. 236 East Water st. They are continually getting out new and tasty designs to meet the wants of the trade.

A MILWAUKEE firm is introducing a new process of burning crude petroleum for fuel in an extensive manufacturing plant in Neenah, Wis. The firm does not yet desire to make any public announcement of their process, but we are assured that it will be an entire success.

FOUR hundred delegates to the district meeting of the Brotherhood of Locomotive Firemen met in this city May 20. They did some good work and enjoyed themselves thoroughly. This is but one of the many conventions already booked for Milwaukee this season.

THE most liberal street railway company in the world is to be found in Milwaukee. It is the Hinsey Cable Line running half the length of Sixth street. The entire public is allowed to "pass" free over the entire length of the line (about four miles.) The Company has not yet declared a dividend.

THE G. A. R. committees are "working like beavers" to have everything in readiness for the great Re-Union of Veterans this summer. The great naval battle on Lake Michigan will be worth coming thousands of miles to see. Comparatively few people ever have seen a naval battle, and the graphic representation of one, on this occasion will be an event long to be remembered.

MILWAUKEE millers, like Milwaukee newspaper men, are invariably extremely modest and seldom brag of what they are going to do, but quietly proceed with improvements of importance and complete them with scarcely any mention of the event. We may say here that probably not less than \$100,000 will be expended by Milwaukee millers this year in improving and in enlarging their plants.

We would ask our millers intending to visit Milwaukee in June—Are you Elks, Free Masons, Knights of Pythias or Odd Fellows? If you are you will find

lodges of all these orders here, that will stand a favorable comparison with any in the very largest cities of this country. Our western people are by nature fraternal. Fraternal orders therefore will be found here in their highest state of development.

H. J. DEAL, Western Passenger agent of the Detroit & Cleveland Steam Navigation Co., visited Milwaukee recently to make rates for the visitors at the coming millers' convention. Sec'y S. H. Seamans can give all necessary information. This magnificent line of steamers reaches prominent points on Lake Erie, Lake Huron and Lake Michigan, connecting with railway lines at prominent points. Eastern, Ohio and Michigan millers will certainly find this a pleasant route.

SOME of our contemporaries can hardly speak of Milwaukee without mentioning beer. It indicates the tone of their appetites no doubt. We would say that no one need to visit Milwaukee to drink Milwaukee beer. You can find it everywhere—not only in the United States, but all over the world. Milwaukee ships millions of barrels abroad every year. If you have a curiosity to see how it is made, however, you can see the process of manufacture in its full perfection here.

THE Pabst Brewing Company is boring what is intended to be the largest artesian well in Milwaukee. A beginning has been made by sinking a cistern 20 feet in diameter and 20 feet wide, lined with brick. Below this is a well 200 feet deep and 8 feet in diameter, lined with boiler-iron  $\frac{1}{2}$  of an inch thick. From the bottom of this a shaft is to be sunk to as great a depth as may be necessary to get an ample supply of water for the use of the brewery. Five or six pumps will be employed in drawing the water from the cistern.

BUSINESS with the Reliance Works of this city is reported to be extremely active. Messrs. Allis & Co. have at present in process of construction 21 new flouring mill plants, and several for the manufacture of corn meal. Their department for the manufacture of special machines is kept busy with a steady rush of orders from all parts of the country. There are at present unfilled orders on the books for over 500 special flour mill machines, about 75 Reliance Purifiers being among the number. The Reliance Purifier has worked itself into public favor with wonderful rapidity, although it was put upon the market less than a year and a half ago, about 400 of these machines have been placed in operation.

AGAIN the citizens of Milwaukee will have the pleasure of welcoming the millers from all sections of this great country. They will assemble here in convention to discuss many matters of importance to the trade. It is believed that it will be one of the largest and in some respects the most important of the meetings of the MILLERS' NATIONAL ASSOCIATION. It is thought to be not only possible but probable that a thorough understanding will be arrived at between the Association of spring wheat and winter wheat millers. Members will ascertain why certain things proposed to be done at the Buffalo Convention last year have not been done, and will doubtless take such steps at this time as to ensure the success of plans agreed upon. But we will not anticipate their actions. We hope that their deliberations will lead to an harmonious conclusion. The trade in Milwaukee will not fail to maintain its reputation for hospitality, and we have no hesitation in promising our visitors a very pleasant time. *Verbum sat sapiente.*

#### DEATH OF EDWARD SANDERSON.

At 6 o'clock Monday evening, May 20, 1889 Edward Sanderson, one of Milwaukee's most prominent millers and a loved, honored and respected private citizen, after a very brief illness, breathed his last. His death-bed was surrounded by a portion of his family and some of his nearest friends.

Mr. Sanderson was well known to the milling fraternity not only in this country but abroad. He has been connected with the Millers National Association almost ever since it was organized, and was President of the Wisconsin Millers Association at the time of his death. He has contributed time, money and sound advice to the service of the milling trade.

Edward Sanderson was born at Great Barrington, Mass., sixty-one years ago. About thirty years ago he came to Milwaukee and started a modest flouring mill on the banks of the Milwaukee river, on the site of the present Phoenix mills, in which concern he held the largest interest up to the time of his death. It was chiefly due to his business sagacity that the mill of thirty years ago, with two runs of stone, has grown into an establishment with a capacity, for consuming 7,000 bushels of grain daily. Mr. Sanderson had also been a large and successful operator on 'Change. He was almost lavish in his generosity to persons in distress, but managed to amass a large fortune. It is estimated that he leaves an estate worth from half a million to \$800,000. Those intimately acquainted with him say he left no will.

The immediate members of Mr. Sanderson's family are his wife; his son, Harry B. Sanderson, who was associated with him in business; three daughters Mrs. Otho W. Budd, wife of Capt. Budd, and the Misses Carol and Bessie Sanderson; Mrs. I. W. Van Schaick, an elder sister; John Sanderson, of Poughkeepsie, N. Y., a brother, who was last fall elected judge of his circuit; Howard Sanderson, another brother, and Will Sanderson, a nephew, both associated with him in business. Mr. Sanderson's partner in the grain trade was James Sawyer, a son of his old friend Amos Sawyer.

One of Mr. Sanderson's closest friends was Henry C. Payne, who was with him when he died. "I was intimately associated with Mr. Sanderson for more than sixteen years," said Mr. Payne "and his death touches me very deeply. Mr. Sanderson was one of the most liberal of men in many ways. He gave away more money in a quiet way than any man I know of, and it was often a mystery to me that he was able to amass anything for himself. He was imposed upon often, but never could say no, when appealed to for help. He will be missed by many people in this city. Those who knew him best appreciated him most. He was not a man of many words, and was sensitive about having any of his kindly actions reach publicity. He formed strong affections and would rejoice with his friends when they were successful and feel downhearted when the opposite was true. One could easily touch his sympathies, and I have seen him weep over misfortunes to friends that did not affect him personally."

Mr. Sanderson was a thorough Republican in politics and did much to make Wisconsin a strong Republican state. There is little doubt but that he could have been elected to any prominent office in the gift of the people if he had so desired but he would never consent to become a candidate for office.

He was willing to aid his friends to secure political preferment but wanted nothing of the kind for himself. We extend to his family our sincere sympathy in this their hour of bereavement.

THE urban press everywhere are making urbane mention of the squabble for the location of the new million-dollar Government Building in this city. It is said that there two sides to every thing. Fortunately or unfortunately Milwaukee has three sides. It is evident that the location cannot be settled in any way satisfactorily except by a commission of disinterested citizens of other cities. Of course no location can be made that will please every one, but the great majority would accept such a decision gracefully.

MILWAUKEE appears to be entering upon a career of rapid advancement that was scarcely dreamed of a few years ago. There are many public and private improvements of great importance that are now underway. Five years ago there was little property in the city that would command a price of \$300 per foot, yet sales have been effected this year at the rate of \$1,000 to \$1,500 per foot. Our present population is 225,000, and many good business men believe that that figure will be doubled in the next decade. We know of no better place for manufactories than this city.

THE managers of THE MILWAUKEE EXPOSITION and THE WISCONSIN STATE FAIR for 1889 assure us that preparations are being made for greater and more interesting displays than ever made before in this city. Since the completion of numerous lines of railroads to the farthest boundaries of the state, by means of which citizens at the remotest points can reach Milwaukee in a few hours, due encouragement is given for great and expensive displays, and our neighbors from the interior are not slow in finding out that occasional visits to the metropolis of the state are not only pleasant and instructive but profitable from a pecuniary point of view.

THE unexpected frequently occurs in advertising, just as the expected often fails to materialize. An evidence of this fact came to our attention recently. A certain firm of engravers in this city had been doing considerable work for a trade publication and purely out of compliment and without expectation of direct returns, for they argued, "advertising is money wasted in our business," they placed a small card in the advertising columns of the paper. Last week the publishers received an order for some engraving from a very prominent European manufacturing concern, with instructions that it be turned over to the engravers referred to. The remark is made that they wish their cuts executed in the same high standard of American art that is exhibited by the card presented by this firm.

THE Goodyear Rubber Co., Nos. 372 and 374 East Water st., Milwaukee, are making a specialty of Belting, both Leather and Rubber for mill supplies. They put their trade mark "Gold Seal" on first-class goods only. Their Gold Seal Rubber Belt is recommended as the best Rubber Belt made. The Goodyear Rubber Co. are agents for Schieren & Co.'s Leather Belt in Milwaukee. This firm make several specialties that cannot be had elsewhere. There are places where the Link belt will do better service than any other belt made. The Perforated Planer Belt is made expressly for Planing Machines and cannot be excelled by any belt made; while their Electric Belt made with patent screw fastener is conceded by all who have used it to be the best belt manufactured for extra heavy service. When in need of anything in their line, it would pay those interested to see the Goodyear Rubber Co. before making their purchases.

THE publisher of the UNITED STATES MILLER is desirous of having the names and addresses of Head Millers, Millwrights and Head Engineers in all mills having a capacity of 150 bbls. per day or more.



ON HAND AS USUAL AT THE MILLERS' NATIONAL CONVENTION,

MILWAUKEE, WIS.

\* A FINE DISPLAY \*

JUNE 11, 12 &amp; 13

1889.

DEAL'S

SPECIALTIES

Flour and Grain Testing  
AppliancesFor the Milling, Flour and  
Grain Trades.

Headquarters at The Plankinton.

The Clipper Baking Test.

Deal's Improved Grain Tester.

Triers Engraved to Order.

Take something home with you as a souvenir of the convention.

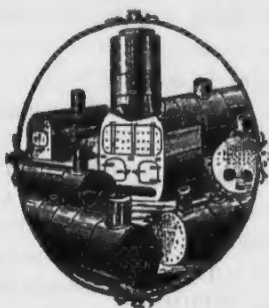
This Company also has a Grand Exhibition at the Paris Exposition.

H. J. DEAL SPECIALTY COMPANY,

BUCYRUS, OHIO.

MARINE BOILER WORKS,  
RICHARD DAVIS,

Manufacturer of High and Low Pressure

STEAM  
BOILERSLARD  
OIL TANKS  
Sheet Iron Work  
IN GENERAL.Oregon St., bet. Barclay and South Water Sts.,  
MILWAUKEE.

Particular Attention Paid to Repairs. Orders Solicited and Promptly Executed.

Sprague Electric Railway &amp; Motor Co.



Operate Your Machinery by Means of

SPRAGUE MOTORS.

Our Sales More than Double those of any other Company.

Power can be generated at one point and distrib-  
uted more reliably and economically by  
Electricity than by any other system.

Estimates Furnished for Complete Installations.

Send for our new Circular on Electric Transmission of Power.

16 and 18 BROAD STREET, NEW YORK.

CONDEMNATION OF COMPETITORS  
IS THE MEASURE OF SUCCESS.I CHALLENGE the wheat heater concern advertising their heater as  
"replacing the Welch" to publish the terms on which the Welch Wheat  
Heaters are replaced. I could replace any other make of heater by  
allowing a big price for it and selling mine low, which is equal to paying  
a bonus.The "Welch" is fully guaranteed, sold on its merits and used more than  
any heater on the market.823 SECOND ST.,  
ST. LOUIS, MISSOURI.

A. B. BOWMAN.

THE EUREKA TURBINE.

The Best Part-Gate Wheel Ever Built.

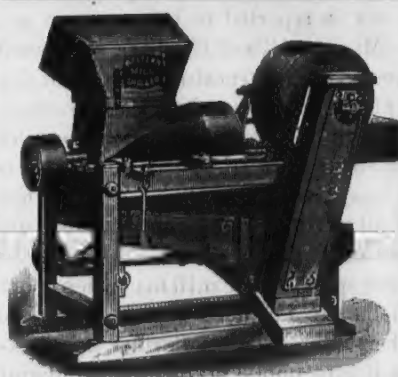
Absolutely unequalled in efficiency, is shown by the accompany-  
ing table from the records of actual tests at the  
HOLYOKE, MASS., TESTING FLUME.

PERCENTAGE OF EFFICIENCY.

	Full Gate.	3/4 Water.	1/2 Water.	1/4 Water.
24" Wheel.....	.8436	.8416	.8208	.8002
24" Wheel.....	.8206	.7910	.7700	.7003
24" Wheel.....	.8078	.7578	.7273	.6796
24" Wheel.....	.8000	.8017	.7614	.6850

No other turbine ever approached the above figures at part-gate.  
We publish our part-gate figures. Others sig-  
nificantly omit them.

For Catalogue and information, address

The Allentown Foundry & Machine Co.,  
ALLENTOWN, PA., U. S. A.\* THE \*  
"WESTERN"  
MILL SHELLER.The most Compact, Durable, Best Sheller  
and Best Cleaner.Takes up but little room, runs at low rate of  
speed, requires no attention. It is in  
every respect the

Best Sheller ever offered to the Public.

Please mention this paper. Write for full particulars to.

UNION IRON WORKS, - DECATUR, ILL.

Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



BRANCH HOUSE, 1425 EAST MAIN ST., RICHMOND, VA.



Opposite the Plankinton House.

—MANUFACTURER OF—

FINE JEWELRY

A VERY LARGE STOCK OF

Diamonds, Fine Watches, Jewelry, Silverware,

Opera Glasses, Gold Spectacles, Canes, Umbrellas, etc.

Goods warranted as represented. Prices reasonable

GANZ &amp; CO.

Budapest, Austria-Hungary.

We are the first introducers of the Chilled Iron Boil-  
ers for milling purposes, and hold Letters Patent for  
the United States of America. For full particulars  
address as above.

(Mention this paper when you write to us.)

FRATTINGER,

City Tailor

389 Broadway,

MILWAUKEE.



**NEW.**—The Beatrice Oat Meal Co., Beatrice, Neb., have just placed an order with the Cackle Separator Mfg. Co. for one of their Cackle Separators.

Rice & Borch's mill dam in Duncan Creek at Bloomer, Wis., was washed out May 8.

The Phoenix Iron Works company of North St. Paul, Minn., are putting in a corn meal plant at Clayton, Ill., for Jacob Sall, formerly of Pekin, Ills.

L. J. ARTHUR has purchased the Brooks estate at Beloit, Wis., which includes a flouring mill, water power, etc. He will change the mill into a manufactory.

The Superlative Purifier Mfg. Co. of Milwaukee, Wis. have an order from Brock & Woods, Milan, Mo. for purifiers, New Era Scalper, Vortex Dust Collectors, etc.

TOM MILLER, JR., of St. Louis, whose voice and face is so well known to millers in the Central States, has located at Alma, Park Co. Colo. where he takes charge of the Phillips Mine.

The Columbia Mill Co. of Oakland City, Ind. have ordered two New Era Scalpers from the Superlative Purifier Mfg. Co. W. L. Kilder & Son of Terre Haute, Ind. have also placed their order for two Scalpers.

The Superlative Purifier Mfg. Co. of Milwaukee have an order for two New Era Scalpers for A. M. Hull, Ithaca, N. Y. They have just shipped one of their Scalpers to J. Allen Smith & Co., Knoxville, Tenn.

The J. B. Allfree Co., Indianapolis, Ind., have received the contract for a 50 barrel mill from E. A. Stevens, Northville, Illinois, who will also use the Keystone rolls, Success bolters, Allfree centrifugal reel, etc.

The Superlative Purifier Mfg. Co. of Milwaukee, Wis. have received an order through the Phoenix Iron Works of Minneapolis for a New Era Scalper for the Fountain City Roller Mill Co., of Fountain City, Wis.

The J. B. Allfree Co., Indianapolis, Ind., have taken contract for a 30 to 40 barrel mill, in which are to be used the Keystone rolls, Success bolters, Climax bran duster and Allfree sieve scalper and flour packer.

Messrs. Blackmore & Co., of Vincennes, Ind., have placed an order with the Superlative Purifier Mfg. Co. of Milwaukee, for 2 New Era Scalpers, Emison Bros. of the same place have also ordered one of the above machines.

QUITE an accident happened in A. A. Begelow's mill at Baraboo, Wis., May 6th. The governor belt broke and the engine "ran away", the result of which was the breaking of a 33,000 pound fly-wheel. No one was seriously hurt.

The Standard Oil company have completed arrangements for building the largest oil refinery in the world at Whiting, Ind., seventeen miles from Chicago. The oil will be piped from Lima, O. The offices will be located in Chicago.

The Cackle Separator Mfg. Co. last month shipped a Cackle Separator to the Jackson Milling & Mfg. Co., Jackson, Tenn., have also recently furnished Nordkye & Marmon Co. of Indianapolis one of their combined Cackle and Oat Separators, and have received an order through James Pye of Minneapolis for a Cackle Separator for the Warner Mill Co., Warner, Dak.

The Vortex Dust Collector Co. of Milwaukee, Wis. report large sales for last month, among others to Dehner, Wuerpel Mill Bldg. Co. St. Louis; Case Mfg. Co., Columbus, O., Barnard & Leas Mfg. Co., Moline, Ill., J. B. Allfree Co., Indianapolis, Ind., Nordkye & Marmon Co., Indianapolis, Ind., Bradford Mill Co., Cincinnati, O., R. C. Stone, Springfield, Mo., and Diamond Iron Works, Minneapolis, Minn.

The Superlative Purifier Mfg. Co. of Milwaukee, Wis. have received an order from the Ogilvie Milling Co. of Canada for nine of their New Era Scalpers for the Ogilvie Mills at Glenora. This makes 25 of the New Era Scalpers which the above company are using; An order for a New Era Scalper from Bravinder & Keats, Spokane Falls, W. T.; they have just shipped three of their Purifiers to the Des Moines Mfg. & Supply Co.

The J. B. Allfree Co., Indianapolis, Ind., report sales of special corn meal milling machinery as follows: One three reduction corn mill to Richwood Mill company, Richwood, Ohio; one huller and pearler to George Schroth & Co., Sacramento, Cal., and one to Halsey & Boyson, Galveston, Tex., and one corn bolt purifier and aspirator to J. S. Lyman & Son, Marshall, Ill.; one 7x18 four high corn mill to Springwater Distilling Company, Bowling Green, Ky.

The J. B. Allfree Co., Indianapolis, Ind., report sales of Keystone rolls to Mr. Bodgers, Judson, Ind.; Horizontal bran duster to Meek, Hager & Co., Marietta, Ill.; Suc-

cess bolters to Crescent Milling Company, Hopkinsville, Ky.; Allfree sieve scalp-ers to Waters & Manakee, Burnt Mills; Mary F. Thoman & Bro., Lansing, Mich., and Richardson & Evans, Indianapolis; one Success bolter to C. A. Campbell Manufacturing company, Baltimore, Md.

The Clowston Milling Company has been incorporated for the transaction of business at Latourell Falls, Ore.—Medicine Lodge, Kans., is desirous of having a flour mill and offers good inducements.—The Western Milling Company of Emporia, Kans., has been incorporated with a capital stock of \$60,000; T. S. Fuller, R. G. Brodie and Chas. Fowler are the directors.—Amstutz & Co., millers at Sterling, O., have made an assignment. The business has been established since 1877; they claimed a capital in the business of \$20,000, and to own real estate valued \$200,000. The firm is composed of J. B. Amstutz, Fred Amstutz, John Amstutz, P. M. Good and Seth Baughman.—At Columbus, Ohio, May 10, the Case Manufacturing Company's establishment, manufacturers of milling machinery was burned. Loss, 75,000; insurance, \$25,000, among twenty companies. Several adjoining residence buildings were destroyed.—R. Gardner's mill at Friend's Station, Tenn., was recently burned.—R. B. Myers succeeds to the milling business of C. A. Lower, at Table Rock, Pa.—The Pierce Mill Company, of Pierce, Neb., are about to increase the capacity of their mill by the addition of new machinery.—J. G. Fitch of Casberry, Manitoba, has gone out of the milling business.—Neyhart Bros. & Co., of Bodines, Pa., have sold their mill to Robert Innes.—D. Dodge & Son are the proprietors of two roller mills. One of 50 barrels capacity at Grinnell, Ia., formerly owned by Geo. Weaver, and named the Grinnell Roller Mills; the other located at Malcom, Ia., with a capacity of 50 barrels per day, and named the Poweshiek Roller Mills. The firm report wheat as being a very scarce article at present.—The mill at Bloomingdale, Mich., has been purchased by Eli Strong, millwright, of Kalamazoo.—Wise & Tuckey have purchased the Paw Paw mills at Paw Paw, Mich., formerly owned by J. D. Sherman, and have converted it into a first-class roller mill.—G. W. Farrar & Co. have bought the steam saw, gin and grist mill formerly owned by J. C. & J. W. Mewborn, at Macon, Tenn.—The flour mills at Eagle Harbor, N. Y., until lately owned by Danolds & Son, have been purchased by Powell Bros.—It is reported that Charles McWilliams has bought the mill at French Creek, Ia., formerly owned by John W. Hartley.—Frederick Kurtz & Son's mill at Centre Hall, Pa., was recently burned. A considerable quantity of wheat, rye, oats, flour and feed which were stored in the mill was also consumed. Loss, about \$20,000.—The mill and elevator at Hays City, Kans., owned by H. D. Towner, was recently burned; loss, \$17,000; insurance, \$2,500.—The Minneapolis & Northern Co.'s elevator at St. Cloud, Minn., was recently burned with its contents; loss, \$40,000.—The flouring mill at Washington, Ind., operated by Toney & Swing, and owned by Clement Lee, was, on April 10, totally destroyed by fire; loss, of Toney & Swing, \$2,500. Mr. Lee's loss estimated at \$22,500; no insurance.—E. M. Eckman has purchased O. S. Hershey's flour mill at Paradise, Pa.—O. A. Duke's grist mill at Clinton, Ala., recently burned; no insurance.—E. Allison's flour mill at New Cumberland, Md., recently burned; loss, \$12,000; insurance, \$3,000.—J. W. Peacock has purchased the mill of J. Frick & Co., at Canton, O., and will increase its capacity to 250 barrels per day.—The 100 barrel flour mill at Beaver Creek, Minn., owned by the Beaver Creek Milling Company, recently burned; loss, \$25,000; insurance, \$17,000.—The flour mill at St. Mary's, W. Va., has been purchased by R. H. Browne, who will hereafter operate it.—Pool Bros' elevator at Forreston, Ills., was, on May 8, destroyed by fire. A considerable quantity of grain and much other property stored in the building was also burned; loss, about \$15,000.—The elevator at St. Joseph, Mo., which had a capacity of 150,000 bushels, was burned May 6. Loss, \$20,000; cause supposed to be incendiarism.—Feldman Bros. & Co.'s mill at Arlington, Minn., was recently burned; loss, \$12,000; insurance, \$3,000.—The flouring mill and warehouse of Reader & Samuels, at Monroe, Ore., were burned April 2nd; loss on mill and machinery, about \$8,000; on stock, about \$17,000; insurance, \$3,000.—The mill of the Harriott Roller Mill Company at Volin, Dak., was burned at the time of the almost total destruction of the village, on April 2. The burning of the surrounding prairie was the cause of the disaster.—Claremont, South Dakota, is desirous of a flouring mill of 100 barrel capacity, and will pay a bonus to the builder.—Belgrade, Minn., will pay \$1,000 as a bonus to the builder of a flour

mill at that place.—A bonus of \$1,000 will be given to any good practical miller who will erect a flouring mill at Beemer, Neb.—Articles of incorporation have been filed by the Farmers' Milling Company of Ferdinand, Ind.; capital stock, \$13,000.—The Waverly Milling Company of Waverly, Mo., have filed articles of incorporation; capital stock, \$15,000.—Chas. Spies, L. Adler and C. Valier are the incorporators of the Enterprise Milling Company at St. Jacob, Ills.; capital stock, \$20,000.—J. A. Dubois & Co. have bought the mill and all the real estate lying within the city limits of Sauk Centre, Minn., owned by the McClure estate. The new owners will, in addition to operating the mill, buy wheat for shipment.

The following are some of the new mills built, being built or contemplated: A three story brick roller mill to cost \$15,000, at Oberlin, Kans.—A roller mill by J. R. Yost at Holbrook, Kans.—A. C. Pierce of Alta Vista, Kans., is reported as about to build a mill there.—A party from Kansas City will build a \$25,000 mill at Marshall, Mo.—H. T. Evans is building a flour mill at Summerville, Ga.—The Water Roller Mill Company will build a 40 barrel flour mill at Liberty, Tenn.—A stock company has been formed at Ennis, Tex., by J. Baldridge and others, with a capital stock of \$20,000, for the purpose of building a 100 barrel roller flour mill.—A new 50 barrel full roller mill is being built at Keno, Klamath county, Cal.—Kelly & Lyle are about to build a 1,000 barrel roller mill at Leavenworth, Kans., the plans for which are completed.—Smith and Woodward will build a roller mill at Abilene, Tex.—J. C. Tune, whose mill at Shelbyville, Tenn., was recently burned, will rebuild.—A 200 barrel flour mill is contemplated by a corporation composed of citizens of Columbia, Tenn.; capital stock, \$20,000.—A new 50 barrel flour mill, short system, is being built at Lydon, O., by J. Parrett.—F. B. Hancock is building a 50 barrel flour mill at Caskey, Ky.—M. Harner, Tyrone, Pa., is building a short system flour mill of 25 barrel capacity.—A 25 barrel roller mill is being built by J. Mack at McClellandtown, Pa.—Warner & Cabbage are building a 40 barrel roller mill at Cordova, Md.—A 40 barrel roller mill has been built at Germantown, O., by S. Hoerner.—A company consisting of S. B. Howks and others propose to build a 100 barrel roller mill at Lebanon, Ky.—A bonus of \$1,000 has been paid by the citizens of Savannah, N. Y., to J. Mill, who will build a grist mill at that place.—C. R. Baer, Nicholas Michael and Ernest Pahnmeier of St. Jacob, Ill., have incorporated the Citizens' Milling Company with a capital stock of \$4,000, to operate a flour and meal mill.—A stock company is being formed at Graham, Va., by C. P. Greever and others to build a merchant mill; capital stock \$20,000.—A 100 barrel roller mill at East Berlin, Pa., is being built for S. Morgan Smith, Sons & Co.—Mr. C. Crow, who until recently was manager of the Omaha Milling and Elevator Company, is building a mill at Whitewood, Dak.—Grimes & Morton of Moscow, O., are about to build a flour mill.—An oat meal mill will be built at St. Joseph, Nev., by Burns & Co.—James Parsons & Co., of Batavia, N. Y., are about to build a large roller flour mill.—A stock company has been organized at Mt. Olivet, Ky., to build a \$5,000 flour mill.—A 25 barrel mill will be built at Easley, S. C., by G. W. Kelley & Son.—W. M. Bergman will build a flour mill of 30 barrel capacity at Oxford, Md.—A 50 barrel flour mill is being built by Hill & McCurray at Durham, Ark.—A roller flour mill will be built at Newport, Tenn., by J. H. Randolph.—C. A. Brown & Bro., will build a flour mill of 50 barrel capacity at Tunkhannock, Pa.—Hanson & Loudenbeck will build a roller mill with a capacity of 50 barrels at Nettleton, O.—The contract has been let for a 100 barrel flour mill for Raht & Bros. at Tullahoma, Tenn.—Woods Bros. & Elder of West Louisville, Ky., will build a 30 barrel flour mill.—Wilder, Moore & Co. of Union City, Tex., have built a 125 barrel roller flour mill.—A 250 barrel mill will be built by Henry McEmore and others at Columbia, Tenn.—A stock company with a capital stock of \$50,000 has been organized to build a flour mill at West Point, Tenn.

(Translated and Condensed from the German by Mr. M. W. Thormählen for THE UNITED STATES MILLER and MILLING ENGINEER.)

#### THE PONOR MILLS IN HERZEGOVINA.

THE dukedom of Herzegovina formerly a part of Turkey in Europe, lies on the northern coast of the Adriatic Sea, between Monte negro on the south, Dalmatia on the west and Bosnia on the north and east. It is now under the dominion of the Austria-Hungarian Monarchy, in what is known as the Circuit of Mostar. Most of this section is rocky, desolate and gen-

erally uninviting. It has but two rivers of consequence—the Herzegovina and the Drina, which flow through step-like valleys from the mountains to the sea. The principal peculiarity of these mountains consists of the absence to a great extent of visible water flowing off. The water from the springs and melting snow accumulates in a succession of pot-shaped valleys, ranging down the decline from the mountain-tops to tide-water, without visible connections, which rarely overflow a certain height, except during the winter or rainy season. The water from these so-called (Ponore) pot-valleys doubtless pass to the river and sea through underground channels and this is the probable explanation of the great fresh-water springs in the sea about which much has been written.

The rainy season which causes the water in these pot-valleys, to flood adjacent farm lands, generally begins in November and ends in April, therefore if it starts too soon it will destroy or damage the unharvested crop; if too late it delays plowing and sowing. The principal grain raised is Kukurutz (Turkish wheat,) and Sirak (a sort of millet.) During the plowing and seeding season the valleys present a picturesque sight. Hundreds of families leave their homes taking their cattle with them and camp out until the planting is finished. The ground is plowed with a wooden plow, the seed sown and



then harrowed in. In a few days the grey soil is changed to patches of verdure and the farmers watch them with grave anxiety. If no floods come the crop is assured, but if floods come in May, the labor and seed is lost and the season is so far advanced that replanting is out of the question for the year. The September floods are then alone to be dreaded and often lives have been lost in attempting to rescue some of the crop from untimely floods.

The Herzegovinian miller utilizes the subterranean outlets of the waters which accumulate in these pot-valleys for running his little flour mill. To an underground cave or cellar he so arranges it, that the waters pass from one pot-valley to his crude little turbine wheel and then passes on to the next pot-valley below. The illustration herewith shows the arrangement of inlet, water wheel and grinding machinery. The whole arrangement is very simple. The miller is not bothered with any of the modern flouring mill systems or machinery. When the miller wants to stop his mill he simply raises the wheel out of the water and the mill stops. At the Falls of Kravica, where a large quantity of water can be utilized, there are about thirty of these mills ranged along close together, forming a Herzegovinian "milling center," as it were. These mills are able to grind the Turkish wheat so as to meet all the demands of their customers who have not learned to desire anything better.



## AN AUTHENTIC BUYERS' GUIDE.

**MILL AND ELEVATOR BUILDERS, MILL FURNISHERS, MANUFACTURERS OF AND DEALERS IN MILL AND ELEVATOR MACHINERY AND SUPPLIES.**

Cards will be inserted under this heading in the "U. S. Miller," not exceeding three lines, copy of paper included, for FIVE DOLLARS per year, cash with order. Additional lines, \$1.00 each, per year.

Edw. P. Allen & Co., Milwaukee, Wis., builders of complete Flour Mills, manufacturers of Flour Mill Machinery, and dealers in Supplies of every description. [Mr. 89.]

John C. Higgins & Son, 165 West Kinzie Street, Chicago, Ill., mfrs. of and dressers of Mill Picks. [Mr. 89.]

H. P. Yale & Co., Milwaukee, Wis., Manufacturers' Agents of Engines and Boilers, New York Leather Belting Co.'s Leather Belting, Dodge Wood Pulley

Robert Peck & Son Co., Baltimore, Md., manufacturers of Steam Engines, Water Wheels, Flour, Corn, Paper, Saw and Cotton Mill Machinery.

W. J. Clark & Co., Salem, O., manufacturers of "SALEM" Elevator Buckets, etc.

E. C. McCully, (P. O. Box 214) Lancaster, Pa., manufactures Cob Crushers, Cooper's Stoves, Castings, Patterns, etc. [Mr. 89.]

B. H. & J. Sanford, Phoenix Iron Works, Sheboygan, Falls, Wis., manufacturers of the "IMPROVED WALSH DOUBLE TURBINE WATER WHEEL." [Mr. 89.]

John C. Miller, York Foundry and Engine Works, York, Neb., Mill and Elevator machinery of all kinds, Engines, Rollers, Pulleys, Shafting, etc. [Mr. 89.]

The Gotta Percha and Rubber Mfg. Co., 159-161 Lake St., Chicago, Ill., Belting and Rubber Goods. [Mr. 89.]

Richmond Mfg. Co., Lockport, N. Y., manufacturers of Grain Cleaning Machinery, Bran Dusters, etc. [Mr. 89.]

N. Y. Belting and Packing Co., N. Y. Leather Belting Co., W. D. Allen & Co., Agents, 161 Lake Street, Chicago. [Apr. 89.]

W. G. Avery Mfg. Co., 10 Vincent St., Cleveland, O., Specialties: Avery Lever Belt Punches, Avery Seamless Elevator Buckets, Belting, Elevator Bolts, etc. [May '89.]

The H. J. Deal Specialty Co., Bucyrus, Ohio, Headquarters for Flour and Grain Testing Appliances, and Specialties for the Milling, Flour and Grain trades. [May '89.]

A. B. Bowman, 223 Second St., St. Louis, Mo., manufacturers of Wheat Heaters.

Sprague Electric Railway & Motor Co., 18 and 19 Broad St., New York, Electric Motors, Electric Transmission of Power.

Stilwell & Bierce Mfg. Co., Dayton, Ohio, Mill Builders, Manufacturers of and Dealers in Water Wheels, Feed Water Heaters and Flour Mill Machinery and Supplies.

Milwaukee Bag Co., No. 236 East Water St., Milwaukee, Wis., manufacturers of plain and printed Flour and Grain Bags of all kinds.

E. F. Wyer, 66 S. Canal St., Chicago, Mill Furnisher, Belting Cloths made to order.

Jas. Leibel & Co., Springfield, Ohio, Water Wheels.

Wesson Oil Co., Rochester, N. Y., Oils.

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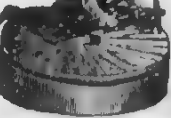
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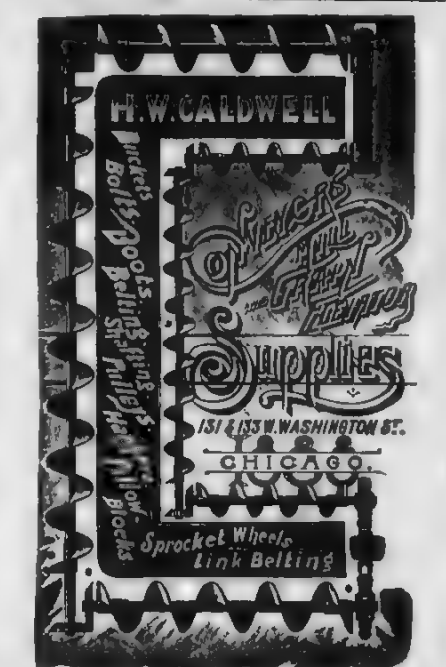
Bernhard Stern, "Jupiter Mills," Milwaukee Wis., Roller Mill, Hard wheat Patents, Principal brand, "Jupiter." [Apr. 89.]

Faist, Kraus & Co., "Duluth Roller Mill," Milwaukee, Wis., Manufacturers and Exporters of choice spring wheat flour. Daily capacity 1500 barrels. [May '89.]

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**FOR SALE.** The "Central Mills," of 300 barrel capacity, situated in the thriving city of Atchison, Kas., with a good wheat crop, and the business fully established to go right ahead. Satisfactory reasons for selling. For further information address WM. BOWMAN, Atchison, Kas.

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## CARE OF WATER WHEELS.

**W**HEN a mill owner buys a water wheel and puts it out of sight under his mill, he expects that wheel to "keep right along eating shad" fifty-two weeks per year and never stop for bones. Some men have been known to purchase a steam engine, and, after once starting up, run the machine 130 hours per week as long as the engine held together. Occasionally, way back in saw mills, this sort of thing is tolerated now-a-days, but the increased price of coal has induced most steam users to become progressive, even when other considerations failed to move them.

It would be barbarous to treat an engine as above described, yet water wheels are subjected to just that kind of care, year in and year out. The "best wheel in the world" is purchased and dropped into the wheel pit. Nothing more is thought of that triumph of hydraulic engineering until the gears fall out of mesh, and the mill stops running through the burning out of a step. Repairs, in such cases, often consist merely of a new step, a new bolt or two, and a hurry to get out of the wheel pit.

Water wheel repairs are not often called for, except to the case or penstock, but, like many other repairs, could be made valuable. A water wheel is a rusty looking concern, not at all interesting to the owner, who too often gives it a poke with his cane, decides that it is "all worn out," and listens to the smooth tongued agent of another "best wheel made." If the old wheel could have \$10 laid out on it for repairs, it would have done good work for ten years longer, and perhaps have delivered more power than the new wheel.

It will pay to let Mike clean the rust off the old wheel and polish it up with a wire scratch brush, such as is used in the foundry. A vigorous use of this tool, reinforced by a cold chisel and hammer, will work such a transformation in the old turbine that its owner would even forget to give it the conventional poke with his cane.

A water wheel, once clean, should be painted with boiling hot gas tar and allowed to dry at least two hours—better two days—before being put back into the pit. The case should receive the same treatment. Lumps of rust on the chutes of turbine wheel cases do not add to the power derived from the water, and the cleaner the chutes, the better the percentage available.

It pays to shut out the water once in three months and crawl into the wheels. If a man takes with him on these occasions two quarts of brains, a monkey wrench, a cold chisel and a hammer, he can crawl out of the wheel in two hours time knowing that the turbine is many dollars better than when he went to it.

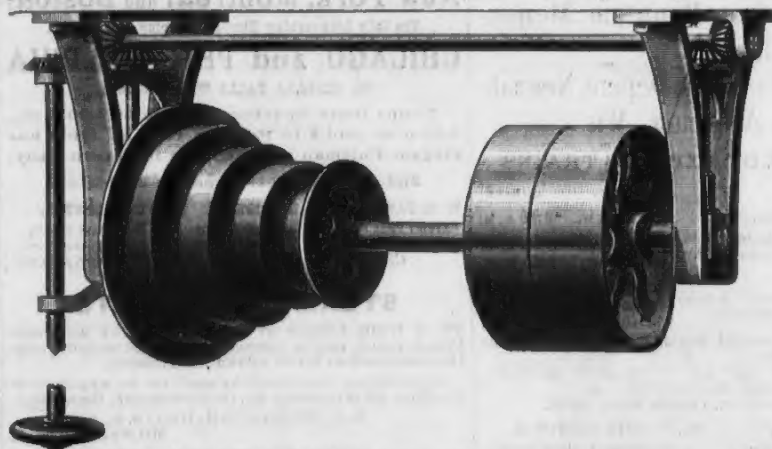
Perhaps a crank-rod is broken, which allows one of the gate-chutes to remain open or shut, as it may chance to lie. In this case waste of water is taking place when the wheel is idle, or a fraction of the wheel's entire power is lost by the chute remaining closed at all times. To determine this fraction, regard the numerator as one and the entire number of chutes in the wheel, or gate, as the denominator. The segment gears, if there are any in your make of wheel, may become badly worn, and they will wear badly under water, causing only a partial opening or closing of the gate, and quite a loss of power and water thereby.

A little bolt may get loose, fall out or rust off, letting the end of a lever get loose. Perhaps this may cause a leak of water or of power, or it may cause a tremendous breakdown, which might ruin the wheel, its case, and perhaps the main gears as well. The quarterly visit to the wheel enables the millwright to nip in the bud many of these incipient breakdowns. He applies new parts, and, in fact, does the repairs "just before they are needed." He prevents breakdowns by anticipating repairs.

The whole turbine business may be summed up as follows: If a manufacturer would treat his water wheels half as well as all his other machinery is treated, they would do more work with less water, last longer, need replacing less frequently, and cause fewer breakdowns than they do under existing methods of careless handling. Every mill owner ought to make his millwright a New Year present of \$10 or \$20, with the request to pay it back by "taking care of the water wheels" during the coming year. It would repay the investment many fold.—*Paper Trade Journal*.

## AN ADJUSTABLE COUNTERSHAFT.

**E**VERY machinist knows that it is best to keep driving belts just as loose as the nature of the work will admit, for by so doing the friction and wear upon the journals is much reduced, the life of the belt is greatly increased, and it is much more easily handled and shifted from step to step of the cone pulleys when changing speed. Where only one thing is done upon a machine, it is, of course, possible to keep the belt about as loose as the work it has to do will permit; but in the case of a lathe, milling machine or, in fact most machine tools upon which a variety of work is done, there are times when it is necessary to have the belt as tight as possible, and yet, perhaps, most of the time it could be quite loose.



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We illustrate above an improved countershaft—invented by a machinist—Frank R. Hynes, 109 Ambrose street, Rochester, N. Y., to enable the belt to be instantly adjusted to the degree of tension necessary for the work in hand. The boxes are in one piece, provided with flanges to keep them in place, and are moved up or down in the hangers by means of screws which are turned by the gears and shaft passing over the countershaft which in turn is moved by means of the vertical shaft, upon which is a hand-wheel placed within easy reach of the operator.

By the use of such a countershaft no greater tension need be upon the belt at any time than is absolutely necessary to make it pull the out, and thereby, as every machinist will know, a great deal of destructive wear and tear upon belts, and machine, and countershaft journals may be avoided, besides effecting a saving of power, time (otherwise spent in lacing and unlacing belts,) and of patience.

## DOG LABOR IN WORKSHOPS.

In old times dogs were in constant use as turnspits, and, at a blacksmith's shop in Stanton, N. Y., dogs are used to supply power for a furnace. A wheel eight feet in diameter has been constructed, and it is of sufficient width to admit of one dog standing in it. Four dogs are used, each working for one hour and resting for three. When not at work the dog on duty stands in the wheel facing the forge until told to "go ahead." He then sets the wheel spinning merrily round, and by means of a crank and lever the bellows are worked. Large numbers of spikes are turned out at this smithy, and the furnace is seldom idle. The proprietor is a German who has himself trained the dogs, and their use saves him a considerable sum yearly in wages.



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A FULL-BLOODED Maori patriarch, named Ngauah, of Te-Aute pah, was asked his opinion of missionaries. He thus expressed himself:—"Missionary very good man, yes, very good man—for himself. He hold one hand up to the sky, you look up—then he collar your land, your crop, your house, cow and pig with the other. Oh, missionary, very good man."

**HIGHEST WATER-POWER HEAD IN THE WORLD.**—France claims the honor of utilizing a higher water pressure than that recently put in operation in the Chollar shaft on the Comstock lode, in Nevada. At Brignoud, two kilometers from the valley of Gresivaudan, near Grenoble, a turbine 9 feet 10 inches in diameter was put in operation in the year 1875, utilizing a head of 1638 feet. It is still working, and gives a force of 1500 H.

P., with a flow of 300 litres of water per second.

**PRIZES FOR MECHANICAL RESEARCH.**—The German Society for the promotion of Industry offers the

following prizes:—1. £300 and a silver medal for the best solution of the question—To what extent is the chemical composition of steel, especially the amount of carbon contained therein, to be regarded as a standard in the matter of cutting and edge tools? 2. £250 and a silver medal for the best treatise on mechanical engineering applied to the construction of machinery. 3. £200 for an essay on hoisting elevators, their construction, security, etc. Answers to the above must be sent in before November 15th, 1890.

**A PHOTOGRAPHIC PHONOGRAPH.**—M. Leon Equille, a Mexican, it is stated, has perfected a marvelous invention in electricity and photography. By speaking in a telephone transmitter, which consists of a highly polished diaphragm, reflecting a ray of light, this ray of light is set into vibrations, and a photograph is made of it on a traveling band of sensitized paper. Now comes the wonderful part. If the image of this photographic tracing is projected by means of an electric arc or oxy-hydrogen light upon a solenium receiver, the original speech is then heard. It is evident that there is no limit to the development of this peculiar combination of methods.

A laughable scene was enacted at Montreal last Sunday morning. A drunken man sent in a false alarm of fire and ran off laughing heartily at the joke. He was chased, and finally caught just as the police came up with a line to rope off the ground, when thinking that he was to be lynched he fell upon his knees and piteously prayed the guardians of the peace not to hang him to a lamp post. They generously refrained, and contented themselves with locking him up.

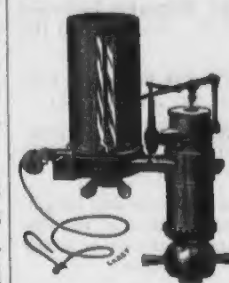
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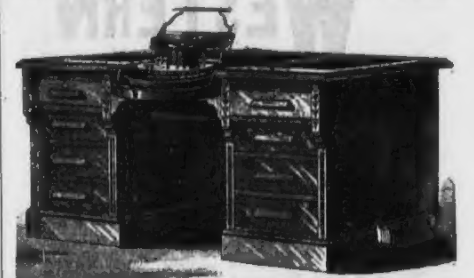
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A farmer in Terrell county, Ga., went out the other night to wash a fine Jersey cow in kerosene to cure her of the itch. He had just got her well saturated when a clumsy little negro, who was holding the light, accidentally set fire to her. The cow started off through the darkness on a jump. She was finally captured and taken home, and has entirely recovered from the burning she received, but the farmer omits to state whether she was cured of the itch or not.

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That the Wisconsin Central has representatives distributed throughout the country, who will cheerfully give any information that may be desired and that its terminal Agents are specially instructed to look after the comfort of passengers who may be routed via its line.

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STATIONS.	DEPART.	ARRIVE.
Champion, Republic,	*1:35 A. M.	*3:30 A. M.
Iron Mountain, Menominee,	*1:35 A. M.	*3:30 A. M.
Marinette, Green Bay,	3:10 P. M.	3:55 P. M.
Depere,		
Green Bay, Depere, Appleton, Menasha, Neenah,	*7:35 A. M.	*8:55 P. M.
	*7:55 A. M.	*8:55 P. M.
	3:10 P. M.	10:30 A. M.

\*Daily. †Daily, except Monday. All other trains daily except Sunday.  
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### HOW ROLLERS WEAR.

**R**OLLERS cannot be expected to retain their original form; hard and truly finished as they may have been, the effect of continuous work is to wear them out of truth. They usually wear hollow from the ends, that is to say, if rollers after working, say three years, are taken out and tested by a straight edge, it will be found that the ends are higher than the rest of the length; this is also proved in the lathe. The reason for this wear is that the feed never runs quite to the extreme edge, consequently day by day a slight depression is worn by the feed until it is great enough to be seen, and may often also be detected by the imperfect work done. Of course the average work of the roller gets worse as time goes, because the ends of a pair being high, and the rest of the surface low, the feed passes through with gradually less pressure until the difference becomes noticed. The attendant may attempt to solve the difficulty by applying extra force, but seeing that it is a case of iron versus iron, the net result is not satisfactory, the energy being, as too often happens, thoroughly misapplied. The real remedy is to take the rollers out, say once in two years, and if untrue have them ground true with the emery wheel. If the ends are sunk a shade under the rest of the length, say, for .1in. each end, better work may be done. It is obviously better to have nine-tenths of the surface in contact at the loss of the rest, rather than that all should be reduced in efficiency.—W. R. V. in *The Miller's Gazette* (London.)

### A PNEUMATIC RAILWAY.

Jules Verne, the wonderful French inventor of scientific fairy tale, has published a little sketch founded on the idea of Colonel Pierce, the American engineer,

CAWKER'S AMERICAN FLOUR MILL AND ELEVATOR DIRECTORY FOR 1898, issued March 3, is meeting with much praise from all departments of the trade. While not claimed by the publisher to be perfect, it answers FULLY the requirements of the trade. It is the only list published. The demand is limited and the price (Ten Dollars per copy) is cheap, considering the labor required in compiling, printing and selling. It contains lists of flour mill and grain elevator owners, miscellaneous kinds of mills such as corn, rye, oatmeal, rice and feed mills, millwrights, flour brokers and dealers in various sections of the United States and Canada, and a good list of European flour and grain importers. Kind of power used, rolls or stones, capacity and millers supposed to be worth \$10,000 or more are indicated in thousands of cases.

who has promulgated the notion of connecting Europe and America by a pneumatic railway under the Atlantic. Verne tells how in America he is most courteously received by the chairman of the Pneumatic Tube Railway Company at the terminus of the Boston-Liverpool railway; the chairman says to him: "The rails of our submarine line run through a huge tube of the size of an ordinary tunnel, two such tubes connecting America and England. Through one, the line runs to and through the other from each country. The number of the sections in each tube is 1,600,000, with a total weight of 13,000,000 tons. In sinking the tubes 200 ships of 2,000 tons each have been employed. The trains are worked in the same manner as pneumatic letter post, by air, the current for moving the train being produced by two enormous steam blowers. Furthermore the rotation of the earth assists the trains. The rate at which the train travels is 1,800 kilometres per hour, so that the journey from Boston to Liverpool is accomplished in two hours and forty minutes." This enormous speed, Verne goes on to show, causes some curious confusions. Thus, as the difference of time between Liverpool and Boston is four hours and fourteen minutes, a train leaving the American city at 9 o'clock in the morning arrives in the former at 3.54 in the afternoon—that is, being 4h and 14m late. On the other hand the trains of the Anglo-American railway moving 900 kilometres per hour quicker than the sun the train leaving Liverpool at noon arrives in Boston the same day at 9.26 a. m.—that is, two hours and twenty-six minutes before it is started.

THE C. I., St. L. & C. Ry. (Kankakee line) is the best route to Florida. Close connections in Central Union Depot, Cincinnati with through express trains of C. N. O. & T. P. Ry. Queen & Crescent Route.



## TRADE NOTES.

THE Avery Stamping Co., Cleveland, Ohio, have just issued a vest pocket diary of unique design for the especial use of traveling men. It also contains their price list. They will send it free to all traveling men writing for it and mentioning this JOURNAL.

THE Knickerbocker Co., of Jackson, Mich., are finding a good demand right along for their excellent machines, of which they are selling from 125 to 150 per month. Among their recent orders for "CYCLONES" we note the following: Jones & Co., New York, 11; W. C. Mansfield & Co., Cleveland, Tenn., 4; Great Western Mfg. Co., Leavenworth, Kan., 9; Novelty Mill Co., Parkersburg, Va., 7; C. A. Gambrill Mfg. Co., Baltimore, Md., 19; Clay Milling Co., Liberty, Mo., 3; Williams & Groat, Portland, Ore., 5; Lincoln Roller Mills, Lincoln, Ill., 8; James Pye, Minneapolis, Minn., 13; Columbia Mill Co., Columbia, Tenn., 11; Edw. P. Allis & Co., Milwaukee, Wis., 9.

THE H. J. Deal Specialty Co., of Bucyrus, O., make a specialty of supplying millers with the useful and ornamental specialties required by the trade, such as flour triers, magnifying glasses, flour and grain testers, trade jewels, etc., etc. It is the only establishment of its kind in the world. Mr. H. J. Deal, the founder of the company, has, we believe, been present at every important gathering of millers in the last dozen years, and his genial presence on these occasions is always welcome to a host of members of miller associations. His displays are always unique and attractive, and we are pleased to note that he will be in Milwaukee in June with a full line of novelties.

Among the larger concerns who have recently adopted the Reliance Safety Water Columns, manufactured by the Reliance Guage Co., of Cleveland, O., are the Salisbury Mfg., Salisbury, Md.; The Gorrie Ice Mfg. Co., Savannah, Ga.; The Collins Co., Collinsville, Conn.; S. W. E. D. Springer, South Creek, N. C.; The Hill Clutch Works, Cleveland, O., and the Brooklyn Line of Electric Ry., Cleveland, O. The Reliance Company have also received a second order from Haldeeman, Grubb & Co., of Chickies, Pa., who had been using these safe-guards for over a year, and a third order from the Walker Mfg. Co., of Cleveland, who bought their first column about three years ago. They are sold on their merits, and seem to be giving remarkable satisfaction.

THE attention of our readers is called to the advertisement of the Westinghouse Machine Company, of Pittsburg, Pa., whose card will be found in another column of this issue. On May second one of our editorial staff visited Pittsburg, and while there availed himself of the opportunity afforded to make a tour through the works of the Company referred to.

The Company's establishment is located on Liberty and Penn. avenues, 24th, 25th and 26th streets. It covers two and one-half large squares, and over \$700,000 are employed in conducting its business. For boldness of design, and thoroughness of its system of manufacture, we doubt if this establishment is equalled in the whole manufacturing world. At all events, its peculiarities have been sufficient to attract visitors from all the manufacturing centers of America and Europe, chief among whom have been the Company's own competitors in the manufacture of steam engines. Nearly all of the large engine builders of America have visited the company's establishment—some of them many times—while the largest builders of Great Britain, it is said, have visited Pittsburg principally with this object in view. The company seems to make no secret of its system of manufacture, so that all visitors (even its most prominent competitors) are cordially received. Its product consists exclusively of steam en-

gines, whose distinctive feature is that they are capable of transmitting their entire power on to actual work. In other words, one of their 100 H. P. engines will deliver 100 H. P. on to the belt, and requires only a 100 H. P. boiler to operate it, and the regular consumption of coal necessary to produce 100 H. P. It is claimed by the management of the company that where other engines are employed, the "speeding-up" devices which must necessarily be used, consume so large a proportion of the engine's power that, to obtain 100 H. P. of actual work, it is frequently necessary to use an engine of 150 H. P. capacity, with its accompanying investment for 150 H. P. boiler and the regular consumption of fuel to operate the larger engine. All the engines built by this Company are built in quantity, to hardened steel templates, with thoroughly interchangeable parts throughout. The smaller engines are built in lots of 50 to 100 of one size, at one time, on one shop order, and are carried in stock, without much regard to the orders on hand. The larger engines are built in lots of 12 to 30 of one size, at one time. Each engine is thoroughly tested before shipment. They are all marketed through the medium of general agencies whose selling rights are exclusive in their respective districts. Agencies are now in full operation in all parts of the United States, Maritime Provinces of Canada, Mexico, Central America, South America, Australia, Italy, Spain, France, Holland, Denmark, Norway and Sweden, Russia and the Kingdom of Prussia, while agency contracts are now in negotiation for England, India, Turkey, Japan, &c.

**A TEST FOR WATER.**—Prof. Angell, of Michigan University furnishes the following as a test of the purity of water for drinking. "Dissolve about half a teaspoonful of the purest white sugar in a pint bottle completely full of the water to be tested, and tightly stopped; expose it to daylight and a temperature up to 70 degrees Fahrenheit. After a day or two examine, holding the bottle against something black for whitish floating specks, which will betray the presence of organic matter in considerable proportion."

## IMPROVED WALSH DOUBLE TURBINE WATER WHEEL.

**N**EARLY all users of water power, especially in the older parts of the country, cannot but notice the average supply of water gradually diminishing each year. Streams that a few years ago afforded ample power for all purposes, even in the dry seasons, have since been abandoned altogether, hence the necessity of more economical water wheels.

The time has arrived when the old style, cheaply constructed wheels with poor joints and leaky gates, must take a back seat for something giving greater economy. A wheel that will return power for every drop of water furnished is what the demand calls for at the present time, one which allows no water to escape when the gate is closed, and yet works perfectly free at all times and under all circumstances.

Nothing about a mill or factory is more disagreeable than the job of repairing a water wheel, especially in cold weather, and a wheel requiring such repairs every few years, is something to be avoided. The Improved Walsh, which the accompanying cuts illustrate, it is claimed, possesses the great essentials of perfect construction and maximum power, requiring no repairs, except it be to replace some breakage caused by accident.

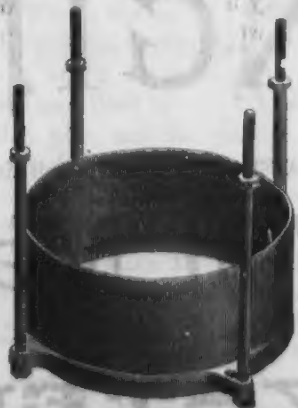


FIG. 1.

Figure 1 is the Cylinder Gate and Draft-Tube combined, a combination fully covered

by letters patent. In this combination the cylinder passes down, admitting the water to the upper set of buckets first, and at the same time forming the draft-tube for the wheel.



FIG. 2.

Fig. 2 shows the Improved Wheel on its shaft, removed from the case. As will be seen the wheel is strictly a double turbine in two sections, each having a set of buckets of cast iron, and is entirely different from any other wheel made. The buckets are quarter twist, receiving the water from the extreme outside, carrying it slightly toward the center and discharging downward and backward, the line of discharge occupying the entire diameter of the wheel, exclusive of the hub, and the water always strikes the buckets at right angles at all stages of the gate. The chutes in the outer case being tunnel-shaped stationary, direct the current the same at all times to the extreme outer end of the buckets, where the greatest amount of leverage is obtained. The hub of the wheel is made concave in order to relieve the step from all downward pressure, and the peculiar formation of the buckets also aids in this respect, thereby employing the force of the water to lift the wheel from the step, consequently furnishing a very free and light running wheel of high speed and great power.

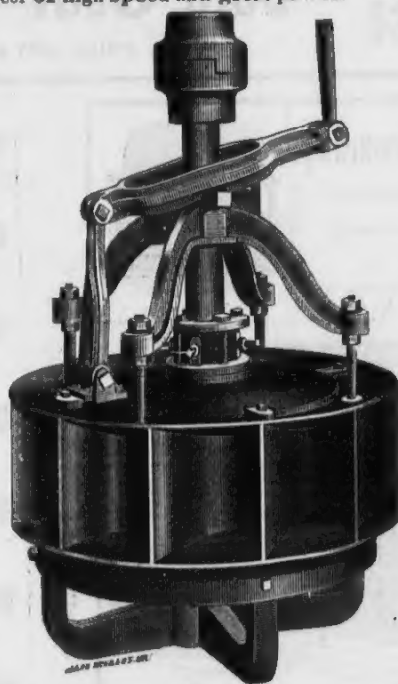


FIG. 3.

Fig. 3 shows the wheel complete, ready for shipment or to be set in a flume. The four-armed spider or bridge-tree attached to the bottom of the outer case has in its center the wooden step prepared by a special process of the manufacturers.

The particulars concerning this wheel, together with much useful additional information, may be had by writing to the manufacturers, B. H. & J. Sanford, Sheboygan Falls, Wis., for their latest catalogue.

## A MILL-BUILDING PLANT BURNED.

**W**E regret to announce that the extensive mill-building and mill-machinery works of the Case Manufacturing Co., of Columbus, O., were almost completely destroyed by fire on the evening of May 10. Most of the patterns, however, were saved, also books and valuable papers. A large amount of machinery, either finished or in course of construction, was also destroyed. Many employees lost their kits of tools. The loss is estimated at about \$75,000 and insurance at \$25,000.

The Ohio State Journal of May 11 says: The works were established in 1879 by Mr. J. M. Case, who recently retired from the company and is now in Europe. The establishment at that time was operated on a small scale. The late Otway Watson soon joined Mr. Case in the business and more recently a company was organized with a capital of \$100,000, with Colonel James Watson president, Hon. John F. Oglevee vice-president and

David Greene, son of the late M. M. Greene, secretary and treasurer. The widow of the late Otway Watson, D. K. Watson, Charles E. Burr and Mr. Brown, who traveled in the interest of the institution, were the more prominent stockholders. Their line of manufacture was of such a character that it was a success from the start for the reason that the company devoted itself to the manufacture of one line of goods, that of milling machinery for the manufacture of flour and cornmeal, and their patents were of such a valuable character that the trade soon grew to large dimensions and ramified all parts of the country. Europe and Mexico and other countries were being worked in the interest of the trade with considerable success. The business had been on such a boom and the order-book had filled up so rapidly recently that among the most prominent items of loss for which the company can secure no remuneration will be that of the trade. Some idea of the extent of the business and the demand for the goods can be gained from the fact that nine car loads were standing on the tracks ready to be shipped and a large supply was in a finished state in the building ready to be placed on the road for its destination. There were on hand orders for the complete machinery for twenty or more mills in different parts of the country which were ready to go into operation, and the company was making extra efforts to meet these orders.

## WATER POWER FROM THE OCEAN.

**T**HE following paper was read at the last meeting of the California Academy of Sciences by Theodore H. Hittell:

Recent visitors to the Cliff House, in casting their eyes down to Adolph Sutro's unfinished marine aquarium, may have observed a very large stream of water running out of it. This stream has a fall of several feet, and is powerful enough to run a mill. But though thus observed it may not have occurred to the observers to inquire where that water comes from or to ask themselves why the level of the salt water in the aquarium is several feet higher than the high-water mark in the adjoining ocean. The answers to these questions are, however, exceedingly interesting, and exhibit a new and most ingenious adaptation of water-power well worthy the attention, not only of scientists, but of practical men.

The explanation of where the aquarium water comes from and why its level is higher than that of high tide in the ocean is very simple. Those who have carefully observed the aquarium have noticed that it is on the lee side, so to speak, of a jutting rock; and that through this rock, and leading out to its exposed face, is a short tunnel, through which the water flows into the aquarium. At the outer end of this tunnel, and on the face of the rock most exposed to the rollers of the ocean, is an excavated hollow place or basin, the bottom of which is several feet above high-water mark. As the rollers come in they dash violently against the face of the rock, rise in mingled water and foam to a very considerable height and splash over into the basin. The water thus caught in the basin does not fall back into the ocean, but runs through the tunnel into the aquarium and maintains its high level. Between that level and the level of the ocean, in the cave, where there is no rock to dash against and no splashing, there is a fall, as indicated by the running stream above mentioned, of several feet, enough to furnish very valuable water power.

It is obvious at glance that the principle of gaining a head of water thus applied may be made of great importance—not only to Point Lobos, but at many other points along the coast. Though the main body of water to be caught is only during high tide, there is hardly any limit to the amount that may be thus secured, provided the basin is large enough and not too elevated. The stream running from Mr. Sutro's aquarium is large enough, as has been stated, to run a mill; and it is evident that it can be relied on with certainty as long as the ocean maintains its level, and its rollers come in as they have been coming in for uncounted ages. With the stream thus secured and capable of increase by simply enlarging the basin, it is plain that great practical ends may be easily and cheaply subserved.



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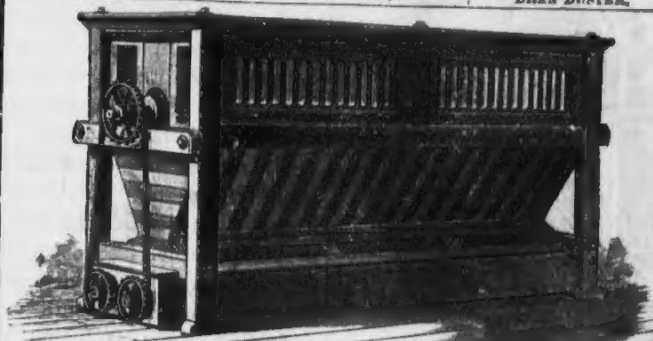


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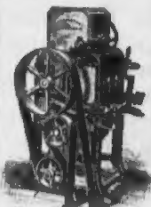
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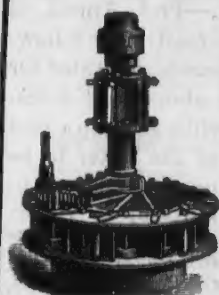
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